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AHIE UNIKIED SHAMES OF AMIERIUA

Idaho Agricultural Experiment Station

Tothereas, there has been presented to the

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen years from the date of this grant, subject to the payment of the required fees and periodic replenishment of viable basic seed of the variety in a public repository as provided by LAW, the right to exclude others from selling the variety, or offering it for sale, or reproducing it, importing it, or exporting it, or using it in producing a hybrid or different lety therefrom, to the extent provided by the Plant Variety Protection Act T. 1542, As amended, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Meridian'

In Testimony Withercot, I have hereunto set my hand and caused the seal of the Plant. Variety Protection Office to be affixed at the City of Washington, D.C. this 30th day of September in the year of our Lord one thousand nine hundred and ninety-four.

Aug.

Keneth H Evans Commissioner

Plant Variety Protection Office Agricultural Marketing Service

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Secretary of Agriculture

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducting this burden, to Department of Agriculture, Clearance Office, OIRM, Room 404-W, Washington, D.C. 20250; and to the Office of Management and Budget, Paperwork Reduction Project (OMB #0581-0055), Washington, 20250.

FORM APPROVED: OMB 6781-0055. Expires 1731-91

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| 14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverge) 2. Exhibit A, Origin and Breeding History of the Variety. 3. Exhibit E, Novelty Statement. 4. Exhibit C, Objective Description of Variety. 5. Exhibit C, Objective Description of Variety. 6. Exhibit D, Additional Description of Variety. 7. Exhibit E, Statement of the Basis of Applicant's Ownership. 8. Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office 9. Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States." 15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY MANE ONLY AS A CLASS OF CERTIFIED SEED? (See section 83/4) of the Plant Variety Protection Act. 16. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY MANE ONLY AS A CLASS OF CERTIFIED SEED? (See section 83/4) of the Plant Variety Protection Act. 17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? 18. DID THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO 17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? 19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S.? 19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? 19. WES (II "YES." give names of countries and dates) 10. NO 20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties. SIG | Moscow, ID 83843 | Aberdeen, Ida | aho 8321Q _{HONE (In} | clude area codej | (208)397-4162 Pete |
| 15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.) VES (If "YES." answer items 16 and 17 below) NO (If "NO." skip to item 18 below) MAC 26 SECTION OF THE VARIETY BE LIMITED AS TO NO TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? VES NO FOUNDATION REGISTERED CERTIFIED 18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? YES (If "YES." through Plant Variety Protection Act Patent Act. Give date: NO 19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? YES (If "YES." give names of countries and dates) NO NO NO NO NO NO NO | b. Exhibit B, Novelty Statement. c. Exhibit C, Objective Description of Variety. d. Exhibit D, Additional Description of Variety. e. Exhibit E, Statement of the Basis of Applicant's Owners f. Seed Sample (2,500 viable untreated seeds). Oate See | hip. d Sample mailed to Pl | ant Variety Prolection Offic | - | and Quality Data |
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| 20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties. SIGNATURE OF APPLICANT JOWNER(S) DATE | 19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR | MARKETED IN THE U.S. | OR OTHER COUNTRIES? | | |
| The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties. SIGNATURE OF APPLICANT JOWNER(s) DATE | | | a | | |
| The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties. SIGNATURE OF APPLICANT (pymor(s)) CAPACITY OR TITLE DATE | 20. The applicant(s) declare(s) that a viable sample of basic request in accordance with such regulations as may be ap | seeds of this variety plicable. | will be furnished with t | he applicatio | n and will be replenished upon |
| SIGNATURE OF APPLICANT IDWING(S) | uniform, and stable as required in section 41, and is entit | led to protection und | der the provisions of sect | ion 42 of the P | (s) that the variety is distinct, lant Variety Protection Act. |
| | | | | | • |
| SIGNATURE OF APPLICANT (OWNER(S)) SIGNATURE OF APPLICANT (OWNER(S)) CAPACITY OR TITLE DIFFERENCE TO NO EXPERIMENTAL TO NO EX | SIGNATURE OF APPLICANT IDWINGE(S) | | · · | | 1 1 1 |
| CAPACITY OR TITLE OATE 1 TO ENTAD TO A EXECUTE | (leant form | Br | eed e r | | 10/27/92 |
| | SIGNATURE OF APPLICANT (OWNER(S)) | LOTO. | YORTHLE | Fxp5-n- | DATE |

FORM CSSD-470 (5-89) Edition of FORM LS-470, 3-86, is obsolute.

Meridian Hard Red Winter Wheat

Exhibit A. Origin and Breeding History of Variety

Meridian is a pureline selection from the A75232W-3-2, a cross of A68231W-A-7-5-3 with a sib of the cultivar 'Neeley'. A68231W-A-7-5-3 was an Aberdeen winter wheat breeding line with the pedigree CNN// 7*LEE/TF/5/SM5/4/BURT/3/REX/ RIO//NBR and the Neeley sib was designated A71111W-5-1. A75232W-3 was an F₄ selection from an F₃ bulk population. A75232W-3 was given the designation IDO357 and tested in the Tri-State Hard Red Winter Wheat Nursery from 1987 to 1989. A head selection of a short plant was made from A75232W-3 was made in 1984 and designated A75232W-3-2. A75232W-3-2 was tested in advanced yield trials at Aberdeen, ID in 1985-86. In 1986-87, A75232W-3-2 was entered into the Tri-State Hard Red Winter Wheat Nursery as IDO360. In 1987-88, IDO360 was entered into the Western Regional Nursery. IDO360 was selected for uniform heading date in the spring of 1988. A uniform bulk of IDO360 was reentered into the Tri-State Hard Red Winter Wheat Nursery in 1988-89. In 1989-90, IDO360 was grown in the Western Regional Nursery. IDO360 was grown in Southern Idaho Extension Trials for three seasons from 1988-89 to 1990-91. Seed from two hundred heads were grown in individual headrows in 1989-90. Three bulk composites of approximately 50 headrows each were grown in 1990-91 at Aberdeen. The bulk composites were designated as breeder's seed for Meridian hard red winter wheat. Meridian has been inbred for 16 generations, eight of those generations as pureline A75232W-3-2. Meridian has remained uniform through four generations of testing since 1987-88.

Exhibit B.

Meridian is a semi-dwarf winter wheat derived from a cross to a sister line of the cultivar 'Neeley' (see exhibit A). It most closely resembles the hard red winter wheat cultivar 'Neeley'. Meridian can be distinguished from Neeley on the basis of mature plant height, grain test weight, and lodging resistance. Meridian is significantly shorter, lower in test weight, and less prone to lodging than the cultivar Neeley (See Exibit B, Table 1). The difference between cultivars for these three traits was found to have little (non-significant) interaction with the year in which the cultivars were compared (Exhibit B, Table 2).

Exhibit B, Table 1. Comparison of Meridian to Neeley in cultivar trials grown at Aberdeen ID, 1986 to 1992; Comparison of means.

| Name | Plant height | Grain test weight | Lodging score | |
|----------|-----------------|----------------------|------------------|---------|
| | in | lb bu ⁻¹ | 1 to 9¹ | <u></u> |
| Meridian | 38.5² | 61.4 | 1.6 | |
| Veeley | 43.3 | 62.2 | 3.2 | - |

^{1.} Lodging score: 1=no lodging, 9=100% lodging.

Exhibit B, Table 2. Comparison of Meridian to Neeley in cultivar trials grown at Aberdeen ID, 1986 to 1992; Analysis of variance.

| | | Plant height | Grain test weight | Lodging score | MANOVA Wilks' |
|-------------|----|-----------------|----------------------|---------------|---------------------|
| Source | df | mean square | mean square | mean square | Lambda ¹ |
| Year | 6 | 7.4 | 6.2 | 4.1 | |
| Trial | 6 | 11.0 | 0.4 | 2.4 | |
| Yr*Trial | 2 | 6.1 | 2.3 | 3.2 | |
| Cultivar | 1 | 149.9** | 3.8* | 23.8** | 0.025** |
| Yr*Cultivar | 6 | 4.8 | 0.6 | 1.9 | |
| Residual | 11 | 5.0 | 1.3 | 0.9 | |

^{*,*} Mean square term for Cultivars or Year*Cultivars significant at the 95% and 99% confidence interval, respectively, using the Year*Cultivar mean square term as an error estimate for Cultivars and the Residual mean square term as the error estimate for Year*Cultivar.

^{2.} For test of significance between cultivars see Table 1b, 'Cultivar Mean Squares'.

^{1.} Multivariate analysis of height, test weight, and lodging, testing the null hypothesis of identical cultivars using the Year*Cultivar interaction as an error term.

EXHIBIT C

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE LIVESTOCK AND SEED DIVISION BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY WHEAT (TRITICUM SPP.)

| NAME OF APPLICANTIS | |
|--|--|
| Idaho Agricultural Experiment Station | FOR OFFICIAL USE ONLY |
| ADDRESS (Street and No. or R.F.D. No., City, State, and ZIF Code) | 9300027 |
| University of Idaho | DESIGNATION (TROCCO) |
| Moscow, Idaho 83843 | Meridian (ID0360) |
| | |
| Place the appropriate number that describes the varietal character Place a zero in first box (e-s- 0 8 9 or 0 9) when number i | |
| 1. KIND: | ettati // vi itaa vi / vi itaa |
| | |
| | = POLISH 6 = POULARO 7 = CLUB |
| 2 TYPE, | 1 = SOFT 3 = OTHER (Specify) |
| 2 1 = SPRING 2 = WINTER 3 = OTHER (Spealty) | 2 2 * HARD |
| | • |
| 2 1 = WHITE 2 = RED 3 = OTHER (Specify) | |
| 3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO: | |
| 1 4 9 FIRST FLOWERING Days after Jan. 1st | 1 5 4 LAST FLOWERING |
| 4. MATURITY (50% Flowering): | |
| 0 2 NO. OF DAYS EARLIER THAN Neeley | 1 = ARTHUR 2 = SCOUT 3 = CHRIS |
| Nycoines | 4=LEMHI 5= HUGAINES 6=LEEDS |
| 0 1 No. of Days Later Than Nugaines, | . L. J. S. C. C. L. S. L. C. |
| S. PLANT HEIGHT (From sail level to top of head): | • |
| 0 9 3 cm. High | |
| 1 5 CM TALLER THAN | · · |
| 1 5 CM. TALLER THAN | 1 ARTHUR 2 = SCOUT 3 = CHRIS |
| 0 8 CM. SHORTER THAN Neeley | TEARTHUR 2-3000 |
| | T TERMI JANGAMIA |
| 6. PLANT COLOR AT BOOTING (See reverse): | 7. ANTHER COLOR: |
| 3 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN | 1 1 = YELLOW 2 * PURPLE |
| 8, STEM: | |
| 2 Anthocyanin: 1 = ABSENT 2 = PRESENT | 1 Yazy bloom: 1 = ABSENT 2 = PRESENT |
| Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT | 1 Internodes: 1 = HOLLOW 2 = SOLIO |
| 0 4 NO. OF NODES (Originating from node above ground) | 2 9 CM INTERNODE LENGTH BETWEEN FLAG LEAF |
| 9. AURICLES: | |
| 2 Anthocyania: 1 = ABSENT 2 = PRESENT | 2 Hairiness: 1 = ABSENT 2 = PRESENT |
| | 2 natiness. 1 - Adden. |
| 10. LEAF: | , |
| Flag lenf at = ERECT 2 = RECURVED booting stage: 3 = OTHER (Speedly): | Flag leni: 1 = NOT TWISTED 2 = TWISTED |
| 1 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT | Texy bloom of flag lenf sheath: 1 = ABSENT 2 = PRESENT |
| 2 6 MM. LEAF WIDTH (First loof below flag long) | 2 6 CM. LEAF LENGTH (First leaf below fine lenf): |
| ECOM 1 MGS 470.4 (6.97) (Formerly Form I PGS 470.4 (3.79) which | may be used) |

| 1 Density: = LAX | 2 = DENSE | Shape: 1 = TAPERIN 4 = OTHER | G 2 = STRAP 3 = CLAVATE Specify |
|--------------------------------------|---|------------------------------|---------------------------------|
| 4 Awnedness: 1 = AWNU | ESS 2 = APICALLY AWNLETED 3 : | AWNLETED 4 = AWNED | • |
| Color at maturity: 5 = | WHITE 2=YELLOW 3=PINK 4= Brown 6=Black 7=Other | = : | |
| 0 8 CM. LENGTH | • • • • • • • • • • • • • • • • • • • | 1 0 MM. WIGTH | |
| 12. GLUMES AT MATURITY | f: | | |
| 2 Length: 1 = SHORT (C. 3 = LONG (C. | (A. 7 mm.) 2 = MEOLUM (GA. 4 mm.) (A. 9 mm.) | 3 Tidih: 1 = NARROW | |
| Bas a l florets - Gl | ume shoulders wanting. | Mid to termina | al florets - shoulders squar |
| | G 2 = OBLIQUE 3 = ROUNDED | Beak: 1 = OBTUSE | 7 - 451175 |
| | 5 = ELEVATED 6 = APICULATE | <u> </u> | <u> </u> |
| 13. COLEOPTILE COLOR: | | 14. SEEDLING ANTHOCYA | NIN: |
| T = WHITE 2 = REI |) 3 = PURPLE | 1 = ABSENT 2: | PRESENT |
| 15. JUVENILE PLANT GRO | WTH HABIT: | · | |
| 1 = PROSTRATE | 2 = SEMI-ERECT 3 = ERECT | r. | |
| 16. SEED: | | | |
| 3 Shape: I = OVATE | 2 = OVAL 3. = ELLIPTICAL | 2 Cheek: 1 = ROUNDE | D 2 = ANGULAR |
| 2 Brush. 1 = SHORT | 2 = MEDIUM 3 = LONG | 1 Brush: 1 = NOT CO | LLARED 2 = COLLARED |
| Phenol reaction | I = IVORY 2 = FAWN 3 = LT. BROWN | | |
| (See instructions): | 4 = BROWN 5 = BLACK | | • |
| 3 Color: 1 = WHITE | 2 = AMBER 3 = RED 4 = PURPLE | 5 = OTHER (Specify) | |
| 1 0 MM. LENGTH | 0 3 MM. WIOTH | 3 6 GM. PER 1000 S | EEDS |
| 17. SEED CREASE: | | | |
| 2 Width: 1 = 60% OR L | ESS OF KERNEL 'WINOKA' | 191 | LESS OF KERNEL 'SCOUT' |
| | SS OF KERNEL 'CHRIS' | 2 = 35% OR | LESS OF KERNEL 'CHRIS' |
| | S WIDE AS KERNEL 'LEMHI' | 3 = 50 % O.R. | LESS OF KERNEL 'LEMHI' |
| | ed. 1 = Susceptible, 2 = Resistant) | 1 Races of Palor | ise |
| 2 STEM RUST PNW Rac | es 2 LEAF RUST PNW Races | 2 STRIPE BUSE Ide | |
| O POWDERY MILDEW | 1 BUNT (T. controversa | | , Typhula spp. Septoria spp. |
| 19. INSECT: (0 = Not Teere | d. 1 = Susceptible, 7 = Resistant) | | |
| O SAWFLY | 1 APHIO (Bydy.) | O GREEN BUG | O CEREAL LEAF SEETLE |
| 1 OTHER (Spealty) Diu | raphis noxia HESSIAN FLY | O GP A | В |
| | RACES: | | |
| 20. INDICATE WHICH YARI | ETY MOST CLOSELY RESEMBLES THAT S | UBMITTED: | |
| CHARACTER | HAME OF VARIETY | CHARACTER | NAME OF VARIETY |
| Plant tillering | Neeley | Seed size | Blizzard |
| Leaf size | Neeley | Seed shape | Blizzard |
| Leaf calor | Neeley | Caleaptile elongation | Neeley |
| Leaf carriage | Neeley | Seedling pigmentation | Neeley |

INSTRUCTIONS

.GENERALs. The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Thest Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965. A Standardized Phenol Method for Testing Thent Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysis. (See attachment.)

Meridian Hard Red Winter Wheat

Exhibit C. Objective Description of Variety

Meridian is a semi-dwarf winter wheat most similar in appearance to the cultivar Neeley. Meridian is 2 d earlier than Neeley and 1 d later than 'Nugaines'. Meridian is 8 cm shorter than Neeley and 15 cm taller than 'Ute'. Meridian has a prostrate, dark green, juvenile vegetation. Meridian has dark green leaves at flowering without a waxy bloom. The cultivar's flag leaf is erect and broad with light anthocyanin auricle pigmentation. Meridian's spike is mid-dense and awned. The basal florets of Meridian's spike have glumes with wanting shoulders. The shoulder shape becomes more elevated in apical florets; terminal florets have square shoulders. The glumes are glabrous with acuminate beaks. The chaff color of Meridian is white. Meridian's kernels are elliptical with angular cheeks, a mid-deep crease, and a mid-long brush. Meridian is moderately resistant to stripe rust (*Puccinia striiformis*, Westend.) field races at Aberdeen and susceptible to field races at Pullman, WA. Meridian is moderately susceptible to dwarf bunt (*Tilletia controversa*, Kuhn) and moderately resistant to snow mold (*Typhula* spp.). Meridian is susceptible to the Russian wheat aphid (*Diuraphis noxia*, Mordv.). Meridian's plant type is uniform for all measured field characters. Seed color variants exist within the variety. Meridian may have up to 2 white kernels per 10 lbs of seed.

IDAHO AGRICULTURAL EXPERIMENT STATION UNIVERSITY OF IDAHO Moscow, Idaho

and

UNITED STATES DEPARTMENT OF AGRICULTURE AGRICULTURAL RESEARCH SERVICE Washington, D.C.

Release of MERIDIAN Hard Red Winter Wheat

The Idaho Agricultural Experiment Station and the United States Department of Agriculture, Agricultural Research Service announce the release of 'Meridian' hard red winter wheat. Meridian was developed for irrigated cereal production areas along the Snake River Plain of Idaho.

Meridian is a pureline selection from the A75232W-3-2, a cross of A68231W-A-7-5-3 with a sib of the cultivar 'Neeley'. A68231W-A-7-5-3 was an Aberdeen winter wheat breeding line with the pedigree 'CHEYENNE'//7*'LEE'/TRANSFER'/5/SM5/4/'BURT'/3/'REX'/'RIO'//'NEBRED' and the Neeley sib was designated A71111W-5-1. A75232W-3 was an F₄ selection from an F₃ bulk population. A75232W-3 was given the designation IDO357 and tested in the Tri-State Hard Red Winter Wheat Nursery from 1987 to 1989. A head selection of a short plant was made from A75232W-3 in 1984 and designated A75232W-3-2. A75232W-3-2 was tested in advanced yield trials at Aberdeen, ID in 1985-86. In 1986-87, A75232W-3-2 was entered into the Tri-State Hard Red Winter Wheat Nursery as IDO360. In 1987-88, IDO360 was entered into the Western Regional Nursery. IDO360 was re-selected of or uniform heading date in the spring of 1988. A uniform bulk of IDO360 was reentered into the Tri-State Hard Red Winter Wheat Nursery in 1988-89. In 1989-90, IDO360 was grown in the Western Regional Nursery. IDO360 was grown in Southern Idaho Extension Trials for three seasons from 1988-89 to 1990-91. Seed from two hundred heads were grown in individual headrows in 1989-90. Three bulk composites of approximately 50 headrows each were grown in 1990-91 at Aberdeen. The bulk composites were designated as breeder's seed for Meridian hard red winter wheat.

Meridian is a semi-dwarf winter wheat most similar in appearance to the cultivar Neeley. Meridian is 2 d earlier than Neeley and 1 d later than 'Nugaines'. Meridian is 8 cm shorter than Neeley and 15 cm taller than 'Ute'. Meridian has a prostrate, dark green, juvenile vegetation. Meridian has dark green leaves at flowering without a waxy bloom. The cultivar's flag leaf is erect and broad with a light anthocyanin pigmentation of the auricles. Meridian's spike is mid-dense and awned. The basal florets of Meridian's spike have glumes with wanting shoulders. The shoulder shape becomes more elevated in apical florets; terminal florets have square shoulders. The glumes are glabrous with acuminate beaks. The chaff color of Meridian is white. Meridian's kernels are elliptical with angular cheeks, a mid-deep crease, and a midlong brush. Meridian is moderately resistant to stripe rust (*Puccinia striiformis*, Westend.) field races at

Aberdeen and susceptible to field races at Pullman, WA. Meridian is moderately susceptible to dwarf bunt (*Tilletia controversa*, Kuhn) and moderately resistant to snow mold (*Typhula* spp.). Meridian is susceptible to the Russian wheat aphid (*Diuraphis noxia*, Mordv.).

In intensively managed irrigated yield trials from 1986 to 1991 at Aberdeen, Meridian, Ute, 'Stephens', and 'Madsen' have had average yields of 8.7, 8.5, 8.1, 8.4, and 8.7 Mg ha⁻¹, respectively. In the same trials the seed weight per volume of Meridian, Ute, Stephens, and Madsen was 792, 771, 755, 767 g l⁻¹. respectively. In 2 yr of Tri-State testing yields of Meridian averaged 6.8 Mg ha⁻¹, Stephens averaged 7.4 Mg ha⁻¹, and Neeley averaged 5.5 Mg ha⁻¹. In 3 yr of extension trials in southern Idaho, Meridian had an average yield of 7.8 Mg ha⁻¹ and Ute an average yield of 7.3 Mg ha⁻¹. In 16 of the 19 (85%) extension trials, Meridian had higher yields than Ute. The test weight of Meridian in extension trials was consistently higher than Ute (95% of trials) with an averages of 797 g l⁻¹ and 769 g l⁻¹, respectively. Meridian is more susceptible to lodging than Ute, similar to 'Daws', Nugaines, and 'Dusty', and superior to Neeley. In 13 of 17 southern Idaho extension trials, Meridian had identical or better logging scores to Ute. Winter hardiness of Merdian is comparable to other hard red winter wheats adapted to southeastern Idaho and superior to Stephens. Meridian had an average spring stand of 96% and Stephens had an average spring stand of 59% in 6 location/yr of trials where low-temperature winter injury occured. Meridian has good milling, excellent mixing, and acceptable baking characteristics. In 2 yr of trials in the Western Regional Nursery, Meridian had optimum dough mixing times 0.3 min longer than 'Wanser', 0.4 min longer than 'Judith', and 0.7 min longer than 'Buchanan'. In the same trials, Meridian, Wanser, Judith, and Buchanan had times to Farinograph peaks of 9.4, 8.8, 9.9, and 6.9 min, respectively. The same cultivars had Farinograph stability times of 16.0, 10.4, 16.8, and 8.6 min, respectively. Meridian had a 0.4 min longer dough mixing time than Ute in trials at Aberdeen from 1987 to 1989. Meridian also had superior dough mixing tolerance to Ute in the same trials (72 vs. 64 degrees). Loaf volume of Meridian is similar to Neeley but smaller than Ute in trials at Aberdeen with corrected loaf volumes of 843 ml, 863 ml, and 937 ml, respectively.

Foundation seed of Meridian will be maintained by the Idaho Agricultural Experiment Station. Seed may be obtained by writing to the Foundation Seed Director, IAES, University of Idaho, Moscow, ID. The date of final signature will serve as the date of official release.

| Director | Date |
|--|----------|
| Idaho Agricultural Experiment Station | |
| University of Idaho, Moscow, ID | |
| Administrator | Date |
| United States Department of Agriculture, | - Land |
| Agricultural Research Service | |
| Washington D.C. | |



Meridian Hard Red Winter Wheat

Exhibit C. Additional Description of Variety

- Table 1. Performance of Meridian HRWW in irrigated trials at Aberdeen, 1986 to 1991.
- Table 2 Comparison of yield and test weight between Meridian and Ute at Aberdeen.
- Table 3. Comparison of Meridian and Ute in SE Idaho irrigated extension trials.
 - B. Brown and L. Robertson.
- Table 4. Performance of HRWW in dryland trials in SE Idaho, 1985 to 1990.
- Table 5. Spring stands of Meridian in nurseries where low temperature winter injury occurred.
- Table 6. Milling and baking data for HRWW grown under intensive management at Aberdeen.
 In cooperation with Mark Kruk
- Table 7. Milling and baking data for HRWW grown at dryland locations in SE Idaho.
- Table 8 Western Regional Yield data 1987-88.
- Table 9. Western Regional Yield data 1989-90.
- Table 10. Two year average of Western Regional yield data.
- Table 11. Western Regional test weight data, 1987-88 and 1989-90.
- Table 12. Western Regional milling and baking data, 1987-88 and 1989-90.
- Table 13. Summary of Tri-State HRWW nursery, 1986-87 and 1988-89.

Extension Trial Data 1988 to 1991.

Cooperative Milling Summary - Preliminary Pullman Data.

Cereal Food Processors Milling and Baking Report, 1989-90.

FGIS Grade Evaluation.

Table 1. Irrigated winter wheat performance at Aberdeen, 1986 to 1990.

| : | WK. | Grain | Std | Test | Heading | | Straw | |
|-------------------------------|----------------|----------------|-------|----------|---------|----------|-------------|----------|
| Cultivar | class | yield | err | weight | date | Height | strength* | Lodging* |
| | | bu/ac | pn/ac | nq/# | | <u>=</u> | - - - | 1-5 1-9 |
| Meridian | HRW | 117.9 | 3.2 | 6.09 | 8-Jun | 37.8 | 3.3 | 1.7 |
| UTE | HRW | 112.1 | 3.8 | 59.3 | 8-Jun | 30.4 | 3.0 | 1.0 |
| NEELEY | HRW | 108.5 | 5.6 | 61.7 | 10-Jun | 42.2 | 8. 9. | 3.3 |
| MALCOLM | SWW | 125.0 | 4.2 | 58.0 | 6-Jun | 38.0 | 2.4 | 1.0 |
| MADSEN | SWW | 123.2 | 4.8 | 59.3 | 10-Jun | 39.2 | 2.2 | 1.2 |
| STEPHENS | SWW | 115.8 | 2.4 | 58.2 | 5-Jun | 36.0 | 2.8 | 1.2 |
| * Chrom popular att E month ! | Joseph J. Hite | 1 and almost a | | - 1 2000 | - | | | |

* Straw score: 1=stiff, 5=weak. Lodging: 1=erect, 9=100% lodged
** Not all cultivars grown in all trials within a year, missing data estimated by least squares method.

Table 2. Comparison of yield and test weight between Meridian and Ute in yield trials at Aberdeen, 1987 to 1991.

| | | - Grain Yield - | Yield - | - Test Weight - | eight - | - Lodging Scores - | Scores - |
|---------|--------------|-----------------|---------|-----------------|---------|--------------------|----------|
| Trial | Trial | · | - | | ٠, ٠ | 1 | |
| year | number | Meridian | Ute | Meridian | Ute | Meridian | Ote |
| | | bu/ac | bu/ac | ng/g | nq/q | 1 to 9 | 1 to 9 |
| 1987 | 10 | 138.3 | 114.0 | 62.3 | 58.8 | 1.5 | 1.0 |
| 1987 | 15 | 128.5 | 127.7 | 909 | 58.3 | 3.5 | 1.0 |
| 1987 | 16 | 120.7 | 115.6 | 60.8 | 59.0 | 4.5 | 1.0 |
| 1988 | 10 | 87.3 | 95.9 | 63.0 | 62.0 | 1.0 | 1.0 |
| 1988 | . 5 | 124.5 | 93.6 | 64.0 | 63.5 | 1.0 | 1.0 |
| 1989 | 9 | 143.4 | 139.9 | 60.8 | 59.2 | 2.0 | 1.0 |
| 1989 | - | 152.6 | 145.3 | 61.3 | 60.1 | 1.0 | 1.0 |
| 1989 | 14 | 138.6 | 136.5 | 61.5 | 59.8 | 1.5 | 1.0 |
| 1990 | 14 | 135.8 | 141.1 | 59.5 | 26.7 | 1.0 | 1.0 |
| 1990 | 15 | 144.7 | 130.3 | 60.3 | 59.0 | 1.0 | 1,0 |
| 1991 | 13 | 100.9 | 92.8 | 62.5 | 6.09 | 1.0 | 1.0 |
| 1991 | 8 | 179.7 | 180.7 | 62.1 | 59.3 | 1.0 | 1.0 |
| 1991 | 19 | 187.4 | 170.1 | 62.9 | 61.1 | 1.0 | 1.0 |
| Average | | 137.9 | 129.7 | 61.7 | 60.1 | 1.6 | 1.0 |
| | | | | | | | |

1. The cultivar with the superior rank for each comparison has bolded values.

Table 3. Comparison of Meridian and Ute in Southern Idaho irrigated extension trials 1989 to 199

| | | - Grain | Yield - | - Test We | eight - | - Lodg | ging - |
|--------|--------------|------------|-----------|-------------|---------|----------|--------|
| Year | Location | Meridian | Ute | Meridian | Ute | Meridian | Ute |
| | | bu/ac | bu/ac | lb/bu | lb/bu | % | % |
| 1989 | Parma | 145 | 130 | <i>62.3</i> | 60.5 | 0 | 0 |
| 1990 | Parma | 122 | 131 | <i>59.7</i> | 58.6 | 30 | 0 |
| 1991 | Parma | 109 | 101 | 61.6 | 60.1 | 0 | 0 |
| 1989 | Grandview | 155 | 134 | 61.8 | 60.3 | 0 | 0 |
| 1990 | Grandview | 118 | 118 | <i>62.7</i> | 61.4 | 45 | 0 |
| 1989 | Saylor Creek | 156 | 144 | 62.9 | 61.1 | 10 | 12 |
| 1990 | Emmett | 127 | 117 | <i>62.7</i> | 59.2 | 0 | 0 |
| 1991 | Hammett | 121 | 113 | 61.1 | 61.6 | 10 | 0 |
| 1989 | Payette | - 88 | 75 | 64.0 | 60.6 | 0 | 0 |
| 1990 | Wieser | <i>7</i> 1 | 62 | <i>59.9</i> | 57.6 | 0 | 0 |
| 1991 | New Plymouth | 94 | 81 | 60.9 | 58.4 | 0 | 0 |
| 1989 | Kimberly | 112 | 97 | 62.3 | 59.8 | 0 | 0 |
| 1989 | Gooding | 132 | 130 | 60.4 | 57.4 | 0 | 0 |
| 1991 | Jerome | 124 | 119 | 63.4 | 62.1 | 0 | 0 |
| 1989 | Dietrich | 96 | 90 | 60.3 | 58.4 | 0 | 0 |
| 1990 | Dietrich | 59 | <i>59</i> | 61.5 | 59.4 | - | - |
| 1990 | Carey | 116 | 94 | <i>60.3</i> | 59.1 | - | • |
| 1990 | Burley | 139 | 114 | 61.3 | 58.0 | 17 | 0 |
| 1991 | Rupert | 129 | 126 | 62.2 | 60.9 | 0 | 0 |
| Averaç | ges | 116 | 107 | 61.6 | 59.7 | 7 | 1 |

Table 4. Performance of hard red winter wheats from 1985 to 1990 at southeastern Idaho locations, sorted by weighted rank summary. Not all entries grown in all years

| 9raln std test weight burker Brik weight burker 31.7 1.7 37 59.4 27.4 3.3 56 59.4 32.3 2.9 58.6 28.5 1.9 5.9 60.0 32.3 2.9 58.6 28.5 1.9 5.9 60.3 29.6 3.3 48 58.1 24.0 2.7 60 60.4 35.1 2.7 39 61.0 33.7 1.2 19 57.6 30.2 33.4 1.7 22 60.3 33.4 1.7 22 60.3 33.4 1.7 22 60.3 33.4 1.7 22 60.3 31.2 2.1 39 61.0 31.2 2.1 38 61.0 31.2 2.1 38 61.0 31.2 2.1 38 61.0 31.2 2.1 38 61.0 31.2 2.1 38 61.0 31.9 2.4 33 59.8 58.8 58.8 | | | , | | | | | | İ | | - ! | | |
|--|---|-----|------|--------|------|------|------------|--------|----------|----------|-----------|--------------------|------------|
| YYS. FORTING SIGN IPSSET GRAIN SIGN IPSSET GRAI | *************************************** | | | etonia | | 1 | Weighter | | ~~ | | Stability | Stability Weighted | NAME |
| 9 MS 10 MS | test grain | 5 | | | | | Spring | | FW rank | | ran K | ran X | |
| NR 39.7 3.3 46 59.6 31.7 1.7 37 59.4 55.9 2.6 27.4 3.3 56 59.4 41.0 4.8 57 n 3 NKS 42.1 3.3 56 60.4 27.4 3.3 56 59.4 41.0 4.8 57 n 4 5 46.6 3.3 13 59.5 32.2 2.3 56 59.4 41.0 4.8 57 e MR 39.6 2.4 4 50.5 59.8 36.3 4.7 6 57.9 14.9 2.8 54 59.8 54.7 14.9 3.2 59.8 54.7 14.9 2.8 54 59.9 59.9 59.9 36.3 4.7 6 57.9 14.9 59.9 59.9 59.9 59.9 59.9 59.9 59.9 59.9 59.9 59.9 59.9 59.9 59.9 59.9 59.9 59.9 | #/bu bu/ac | | ١ | | |) N | niger % | av av | ave=1 | i serie | iins | | |
| 9 MS 42.1 3.3 56 60.4 27.4 3.3 56 50.4 67.6 67.7 41.0 48.6 59.4 41.0 48.6 57.7 49.6 57.7 49.8 57.7 49.8 57.7 49.8 57.7 49.8 57.7 49.8 57.7 49.9 58.7 49.8 57.7 49.9 58.7 49.8 57.7 49.9 58.7 58.9 59.8 59.7 69.9 59.9 58.9 59.7 69.9 59.7 59.9 | 46 59.6 31.7 | 37 | 55.9 | | _ | 53.9 | 58.0 | 44 | 0.895 38 | ₽ | 4 | 5 | Meridian |
| 6 H 455 16 17 61.0 32.6 1.0 27 60.0 54.7 14 32 6 MH 396 2.4 47 61.5 32.3 2.3 69.6 51.7 60.0 54.7 14 32 2 MH 396 2.4 47 61.5 28.5 1.9 53 60.3 44.9 58 54 58 60.3 44.9 58 54 60.3 44.9 58 54 60.3 44.9 58 54 60.3 44.9 58 54 60.3 44.9 58 54 60.3 60.3 44.9 58 54 60.3 60.3 44.7 60.3 44.7 60.3 | 35 60.4 27.4 | 8 | 41.0 | 4.8 5 | | 65.1 | 78.7 | 2 | 0.800 53 | 42 | 46 | 48 | Andrews |
| n 4 S 466 3.3 13 59.5 32.3 2.9 58.6 51.7 3.9 44.9 2.8 54.9 56.9 56.9 57.9 66.8 51.7 3.9 43 56.8 57.9 44.9 2.8 57.9 44.9 2.8 54.9 56.9 56.9 56.9 56.9 56.9 56.9 56.9 57.9 46.9 57.9 56.9 <t< td=""><td>17 61.0 32.6</td><td>27</td><td>54.7</td><td>1.4</td><td></td><td>59.9</td><td>8.89</td><td>18</td><td>1.000 23</td><td>ĸ</td><td>23</td><td>18</td><td>Blizzard</td></t<> | 17 61.0 32.6 | 27 | 54.7 | 1.4 | | 59.9 | 8.89 | 18 | 1.000 23 | ĸ | 23 | 18 | Blizzard |
| 6 MM 396 2.4 47 615 285 1.9 53 60.3 44.9 2.8 54 60 60 60 60 60 60 60 60 60 60 60 60 60 | 13 59.5 32.3 | প্ত | 51.7 | | | 58.3 | 62.5 | 37 1. | 1.060 30 | 88 | 32 | 49 | Buchanan |
| 2 S 36.8 5.7 55 59.8 36.3 4.7 6 57.9 16.8 6.7 | 47 61.5 28.5 | 53 | 44.9 | | | 55.0 | 57.1 | 48 0. | 0.908 55 | 13 | 31 | 44 | Jeff |
| 4 S 40.2 41 58.2 29.6 3.3 48 68.1 36.8 66 59.2 48 68.1 36.8 68.6 59.2 48 68.1 36.8 68.6 59.2 48.8 68.1 36.2 37.8 68.6 69.6 69.5 36.1 68.7 69.7 | 55 59.8 36.3 | 9 | 16.8 | | | 56.9 | 71.9 | 0 9 | 0.389 44 | 8 | 38 | 20 | John |
| 6 S 32.4 3.3 60 61.5 24.0 27 60 60.4 42.2 3.9 56 8 MR 43.2 0.9 26 60.6 35.1 0.8 10 59.2 58.1 1.1 16 9 NR 43.2 0.9 26 60.6 35.1 0.8 10 59.2 58.1 1.1 16 1 NR 43.9 1.5 39 60.3 37.5 1.6 4 59.4 57.8 2.3 17 1 S S 48.8 1.5 7 59.7 33.7 1.2 19 57.6 55.5 1.7 30 1 G NR 41.2 1.3 41 59.9 30.2 0.9 47 59.1 48.5 1.2 50 1 G NR 47.7 2.4 9 61.5 23.4 1.7 22 60.3 59.7 51.0 28 2 NS 50.4 2.6 3 60.6 37.8 2.1 3 59.7 61.0 57.8 50.1 28 2 NS 50.4 2.6 3 61.3 28.4 1.7 22 60.3 59.7 51.0 28 2 NS 50.4 2.6 3 61.3 28.4 2.1 34 60.1 53.5 2.4 36 2 S 38.9 5.8 59.1 33.3 4.7 23 56.7 53.8 7.0 35 2 NS 44.9 2.6 19 61.0 31.2 2.1 38 61.0 53.0 30. 31.8 1.7 34 60.1 53.5 2.4 36 2 NS 47.7 2.8 59.4 59.1 33.3 4.7 23 56.7 53.8 7.0 35 3 NS 50.8 50.8 59.1 33.3 51 58.5 26.8 59.8 59.8 59.8 59.1 39 55.1 55.1 55.1 55.1 55.1 55.1 55.1 55. | 44 58.2 29.6 | 84 | 36.8 | | | 46.4 | 0.1 | 8 | 0.969 54 | 22 | 83 | 29 | Judith |
| 6 MR 43.2 0.9 26 60.6 35.1 0.8 10 59.2 58.1 1.1 16 6 S 41.9 1.5 39 60.3 37.5 1.6 4 59.4 57.8 2.3 17 70 3 MR 43.9 4.0 23 61.7 31.2 2.7 39 61.0 61.3 4.7 5 6 MR 41.2 1.3 41 59.9 30.2 0.9 47 59.1 48.5 1.2 50 6 R 45.0 0.9 18 61.9 29.4 2.7 50 60.4 48.0 3.9 51 6 R 45.0 0.9 18 61.8 33.7 0.9 20 61.5 54.4 1.1 33 7 MS 50.4 2.6 3 61.5 33.4 1.7 22 60.3 59.2 2.4 12 7 MS 60.4 41 43 61.3 28.4 21 34 60.1 53.5 2.4 36 7 MS 60.4 2.6 3 61.5 33.4 1.7 22 60.3 59.2 2.4 36 7 MS 60.4 41 43 61.3 28.4 21 34 60.1 53.5 2.4 36 7 MS 60.4 2.6 19 61.0 31.2 2.1 38 61.0 53.0 3.0 35 7 MS 44.9 2.6 19 61.0 31.2 2.1 38 61.0 53.0 30 30 7 MS 47.7 2.6 8 58.4 34.2 21 38 61.0 53.0 30 31 7 MS 60.4 2.6 3 61.6 31.2 21 38 61.0 53.0 30 7 MS 61.0 2.9 2 61.6 31.6 31.8 21 38 61.0 53.0 30 31 7 MS 61.0 2.9 2 61.6 31.9 58.5 2.4 36 59.8 59.8 59.8 59.1 35 55 7 MS 61.0 2.9 2 61.6 31.9 58.8 58.8 59.8 59.8 59.8 59.8 59.8 59 | 60 61.5 24.0 | 8 | 42.2 | | | 53.1 | 47.7 | 59 0.0 | 0.810 60 | 8 | 24 | 53 | Kharkof |
| 6 S 41.9 1.5 39 60.3 37.5 1.6 4 59.4 57.8 23 17 0y 3 MR 43.9 4.0 23 61.7 31.2 2.7 89 61.0 61.3 4.7 5 6 NR 41.2 1.3 41 59.7 33.7 1.2 19 57.6 55.5 1.7 30 6 NR 42.6 3.3 30 61.9 29.4 2.7 50 60.4 48.0 3.9 51.2 50 6 N 42.6 3.3 61.9 29.4 2.7 50 60.4 48.0 3.9 51.2 50 50.4 48.0 51.7 30 6 N 45.0 1.8 61.3 33.4 1.7 22 60.3 61.5 33.4 1.7 22 60.3 61.5 34 20 41.1 33 41.2 34.1 | 26 60.6 35.1 | 5 | 58.1 | | | 58.0 | 54.3 | 55 0.9 | 0.998 12 | 88 | 36 | 37 | Manning |
| 90y 3 MR 43.9 4.0 23 61.7 31.2 27 39 61.0 61.3 4.7 5 6 NR 41.2 1.3 41 59.7 33.7 1.2 19 57.6 55.5 1.7 30 6 NR 41.2 1.3 41 59.7 33.7 0.9 47 59.1 48.5 1.7 30 6 N 42.6 3.3 30 61.9 29.4 2.7 50 60.4 48.6 1.7 30 61.5 33.7 0.9 20 61.5 50 61.5 30 61.5 30 61.5 50 60.4 48.0 30 61.5 33.4 1.7 22 60.3 61.5 50 61.5 50 61.5 50 61.5 50.7 61.7 50 61.7 50 61.7 50 61.7 50 61.7 50 61.7 50 61.7 | 39 60.3 37.5 | 4 | 57.8 | | | 52.3 | 56.3 | 53 0. | 0.767 15 | 37 | 18 | 27 | Neeley |
| 5 S 48.8 1.5 7 59.7 33.7 12 19 57.6 55.5 1.7 30 6 NR 41.2 1.3 41 59.9 30.2 0.9 47 59.1 48.5 1.2 50 6 R 4.50 0.9 18 61.8 33.7 0.9 61.5 60.4 48.0 3.9 51 6 R 47.7 2.4 9 61.5 33.4 1.7 22 60.3 59.2 2.4 12 7 NS 50.4 2.6 3 60.6 37.8 2.1 3 59.7 61.0 2.8 6 7 R 40.6 4.1 43 61.3 28.4 2.1 54 59.7 57.5 3.4 20 7 S 38.9 5.8 49 59.1 33.3 4.7 23 56.7 53.8 7.0 35 7 NS 47.7 2.6 8 58.4 34.2 2.1 18 58.9 59.0 59.0 3.0 38 7 NS 47.7 2.6 8 58.4 34.2 2.1 18 58.9 59.0 59.0 3.0 35 7 R 51.0 2.9 2 61.6 31.9 2.1 15 58.9 59.0 3.0 3.0 35 7 R 51.0 2.9 2 61.6 31.9 2.8 35 58.8 59.8 56.7 3.4 22 7 S 38.8 51.8 58.8 51.8 58.8 58.8 58.8 58.9 59.0 3.0 35 7 R 51.0 2.9 2 61.6 31.9 2.8 58 58.8 58.9 59.0 3.0 35 7 R 51.0 2.9 2 61.6 31.9 2.8 58 58.8 58.8 58.8 58.9 58.9 58.9 58.9 | 23 61.7 31.2 | 33 | 61.3 | | | 60.4 | 64.8 | 24 1.0 | 1.059 18 | ĸ | 5 | cu | Promontory |
| 6 MR 41.2 1.3 41 59.9 30.2 0.9 47 59.1 48.5 1.2 50 6 S 42.6 3.3 30 61.9 29.4 2.7 50 60.4 48.0 3.9 51 6 R 45.0 0.9 18 61.8 33.7 0.9 20 61.5 54.4 1.1 33 7 MS 50.4 2.6 3 60.5 37.4 1.7 22 60.3 59.2 2.4 1.2 7 MS 50.4 2.6 3 60.6 37.8 2.1 3 59.7 61.0 2.8 6 7 MS 50.4 2.6 3 60.6 37.8 2.1 3 59.7 61.0 2.8 6 7 MS 63.0 2.4 14 60.3 31.9 1.7 34 60.1 53.5 2.4 36 7 MS 47.7 2.6 19 61.0 31.2 2.1 38 61.0 53.0 3.0 35 7 MS 47.7 2.6 8 58.4 34.2 2.1 38 61.0 53.0 3.0 38 7 MS 47.7 2.6 8 58.4 34.2 2.1 38 61.0 53.0 3.0 38 7 MS 47.7 2.6 8 58.4 34.2 2.1 38 61.0 53.0 3.0 38 7 MS 47.7 2.6 8 58.4 34.2 2.1 38 61.0 53.0 3.0 38 7 MS 47.7 2.6 8 58.4 34.2 2.1 38 61.0 53.0 3.0 38 7 MS 47.7 2.8 38.8 3.8 51 58.5 26.8 58.8 58.8 56.7 36 59.8 56.7 36 7 MS 47.7 2.6 8 58.4 34.2 2.1 38 61.0 53.0 3.0 38 7 MS 50.8 50.8 50.8 50.8 50.8 50.8 50.8 50.8 | 7 59.7 33.7 | 6 | 55.5 | | | 62.2 | 79.9 | - | 1,002 13 | 23 | 37 | ä | Sprague |
| 6 R 426 33 90 61.9 29.4 2.7 50 60.4 48.0 3.9 51 6 R 45.0 0.9 18 61.8 33.7 0.9 20 61.5 54.4 1.1 33 5 MS 50.4 2.6 3 61.5 33.4 1.7 22 60.3 59.2 24 12 7 MS 50.4 2.6 3 60.6 37.8 2.1 3 59.7 61.0 2.8 6 7 MS 60.7 2.4 14 60.3 31.9 1.7 34 60.1 53.5 2.4 36 7 S 38.9 5.8 49 59.1 33.3 4.7 23 56.7 53.8 7.0 35 7 MS 47.7 2.8 8 58.4 34.2 51.0 31.2 2.1 38 61.0 53.0 3.0 38 7 MS 47.7 2.8 61.8 31.9 2.1 15 58.9 59.0 3.0 31.8 51.0 51.0 51.0 51.0 51.0 51.0 51.0 51.0 | 30.2 | 47 | 48.5 | | | 59.2 | 71.3 | 80 | 0.806 50 | ₽ | 42 | 47 | Survivor |
| 6 R 450 09 18 61.8 33.7 0.9 20 61.5 54.4 11 33 6 R 47.7 2.4 9 61.5 33.4 1.7 22 60.3 59.2 2.4 12 7 A 70.8 50.4 2.6 3 60.6 37.8 2.1 3 59.7 61.0 2.8 6 7 A 70.8 4.1 43 61.3 28.4 2.1 54 59.7 57.5 3.4 20 7 B 46.3 2.4 14 60.3 31.9 1.7 34 60.1 53.5 2.4 36 7 B 44.9 2.6 19 61.0 31.2 2.1 38 61.0 53.0 3.0 38 7 B 51.0 2.9 2 61.8 31.9 58.4 38.5 58.9 59.0 3.0 13 7 B 51.0 2.9 2 61.8 31.9 58.5 58.6 30.8 58.7 58.5 7 A 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 | 30 61.9 29.4 | 22 | 48.0 | | | 51.7 | 50.9 | 56 0.9 | 0.939 48 | 5 | ଷ | 42 | Wanser |
| 6 H 47.7 2.4 9 61.5 33.4 1.7 22 60.3 59.2 2.4 12 7 H A0.6 4.1 43 61.3 28.4 2.1 54 59.7 61.0 2.8 6 2 S 38.9 5.8 49 59.1 33.3 4.7 23 56.7 53.8 7.0 35 5 NK 47.7 2.6 8 58.4 34.2 2.1 15 58.9 59.0 3.0 38 5 NK 51.0 2.9 61.6 31.9 2.1 15 58.9 59.0 3.0 38 5 K 51.0 2.9 2 61.6 31.9 2.4 35 58.9 59.0 3.0 35 5 K 5 K 51.0 2.9 2 61.6 31.9 2.4 35 58.6 39.8 56.7 57 5 K 5 K 5 K 5 K 5 K 5 K 5 K 5 K 5 K 5 | 18 61.8 33.7 | 8 | 54.4 | | | 58.2 | 58.5 | 52 0.9 | 0.937 21 | 4 | # | 8 | Weston |
| 5 MS 50.4 2.6 3 60.6 37.8 2.1 3 59.7 61.0 2.8 6 4 R 40.6 4.1 43 61.3 28.4 2.1 54 59.7 61.0 2.8 6 2.1 54 59.7 51.5 3.4 20 2 S 38.9 5.8 49 59.1 33.3 4.7 23 56.7 53.6 2.4 36 5 R 44.9 2.6 19 61.0 31.2 2.1 15 58.0 59.0 3.0 38 5 NS 47.7 2.6 8 58.4 34.2 2.1 15 58.9 59.0 3.0 13 5 R 51.0 2.9 2 61.6 31.9 2.4 38 59.8 59.0 3.0 13 5 6 4 5 38.9 58.9 58.9 58.9 < | 9 61.5 33.4 | 22 | 59.2 | - | | 60.3 | 64.8 | 83 | 0.900 | 8 | Q | က | ID0352 |
| 4 R 40.6 4.1 43 61.3 28.4 2.1 54 59.7 57.5 3.4 20 5 R 46.3 2.4 14 60.3 31.9 1.7 34 60.1 53.5 2.4 36 5 R 44.9 2.6 19 61.0 31.2 2.1 38 61.0 53.0 3.0 38 5 NS 47.7 2.6 8 58.4 34.2 2.1 15 58.9 59.0 3.0 13 5 R 51.0 2.9 2 61.6 31.9 2.4 33 59.8 56.7 3.6 22 5 R 51.0 2.9 2 61.6 31.9 2.4 33 59.8 56.7 3.4 22 | 3 60.6 37.8 | 60 | 61.0 | | | 8.09 | 9.09 | 42 0.9 | 0.959 3 | 3 | 4 | 1 0 | IDO355 |
| 5 H 46.3 2.4 14 60.3 31.9 1.7 34 60.1 53.5 2.4 36 2 S 38.9 5.8 49 59.1 33.3 4.7 23 56.7 53.8 7.0 35 5 NS 47.7 2.6 19 61.0 31.2 2.1 38 61.0 53.0 3.0 38 5 NS 47.7 2.6 8 58.4 34.2 2.1 15 58.9 59.0 3.0 13 5 NS 51.0 2.9 2 61.6 31.9 24 33 59.8 56.7 34 22 5 4 S 38.8 3.3 51 58.5 26.8 23 58 58.9 43.4 3.9 55 | 61.3 28.4 | х | 57.5 | | | 62.8 | 66.1 | 21 1. | 1.110 41 | 2 | 83 | <u>8</u> | 100380 |
| 2 S 38.9 5.8 49 59.1 33.3 4.7 23 56.7 53.8 7.0 35 36 37 8 38 33 51.8 51.0 2 | 14 60.3 31.9 | 8 | 53.5 | | | 62.5 | 63.7 | 29 0.9 | 0.960 29 | 8 | 28 | 88 | ID0381 |
| 5 NS 47.7 2.6 8 58.4 34.2 2.1 15 58.9 59.0 3.0 38 5 NS 51.0 2.9 2 61.6 31.9 2.4 33 59.8 59.8 56.7 3.4 22 5 4 S 38.8 3.3 51 58.5 26.8 2.3 58 58.8 43.4 3.9 55 | 49 59.1 33.3 | ន | 53.8 | | ŀ | 60.2 | 62.3 | 38 0.9 | 0.942 37 | 49 | 55 | 55 | DO390 |
| 5 NS 47.7 2.6 8 58.4 34.2 2.1 15 58.9 59.0 3.0 13 5 R 51.0 2.9 2 61.6 31.9 2.4 33 59.8 56.7 3.4 22 5 4 S 38.8 3.3 51 58.5 26.8 2.3 58 58.8 43.4 3.9 55 | 19 61.0 31.2 | 88 | 53.0 | | | 58.0 | . 0.89 | 15 1.0 | 1.050 33 | 72 | 30 | 17 | ID0421 |
| 5 R 51.0 2.9 2 61.6 31.9 2.4 33 59.8 56.7 3.4 22 5 4 S 38.8 3.3 51 58.5 26.8 2.3 58 58.8 43.4 3.9 55 | 8 58.4 34.2 | 5 | 59.0 | • | | 57.9 | 67.5 | 16 1. | 1.210 7 | 47 | 53 | 8 | IDO422 |
| 4 \$ 38,8 3,3 51 58,5 26,8 2,3 58 58,8 43,4 3,9 55 | 2 61.6 31.9 | 8 | 292 | | | 59.1 | 74.2 | 30 | 0.966 14 | 1 | 23 | ιΩ | IDO433 |
| | 51 58.5 26.8 | 88 | 43.4 | | | 56.6 | 58.7 | 51 0.9 | 0.953 58 | 23 | 25 | 8 | MT79125 |
| UT157140 3 R 43.7 4.0 25 59.8 28.1 2.7 55 58.4 53.4 4.7 37 58.8 | 25 59.8 28.1 | 55 | 53.4 | | | 52.2 | 50.1 | 57 1. | 1.160 41 | RS | 45 | 28 | UT157140 |
| Average 4.7 43.2 2.9 60.4 31.6 2.2 59.4 51.1 3.4 59.7 | 60,4 31.5 | | 51.1 | 3.4 | 59.7 | 57.6 | 60.5 | 0 | 0.9 | | | | |

*** Weighted stand means used Proc GLM with observations given a weight equal to 1/m*m where 'm' is the stand of Manning for the trial.

** Weighted rank=(2*)/id rank + 2* wit rank + stability rank + weighted stand rank)

Table 5. Spring stands of Meridian in nursery where low temperature winter injury occured.

--- Spring Stand Score ---

| | | | - 1 | 9 | |
|---------|-----------|----------|----------|----------|----------|
| Year | Trial No. | Location | Meridian | Stephens | Nugaines |
| | | | % | % | % |
| 1985-86 | 19 | Aberdeen | 98 | 48 | |
| 1986-87 | 15 | Aberdeen | 100 | 85 | 75 |
| 1987-88 | 10 | Rockland | 80 | 48 | |
| 1990-91 | 10 | Tetonia | 100 | 50 | 75 |
| 1990-91 | 18 | Aberdeen | 100 | 65 | 100 |
| 1990-91 | Extension | Rupert | 100 | 60 | 80 |
| Average | | | 96 | 59 | |

Table 6. Milling and baking data for Hard Red Winter Wheat grown under intensive management at Aberdeen ID, 1987 to 1990.

| | Flour | Milling | • | - Mixograph | | Bake | | Loaf | Corrected | | Interior |
|----------|---------|---------|------|-------------|-----------|------------|-----|--------|-----------|-----|----------|
| Name | protein | yield | peak | height | tolerance | absorption | | volume | ^1 | | texture |
| | % | % | min | cm | degree | % ө | • | Œ | E | | 0 - 4 |
| MERIDIAN | 11.4 | 62.6 | 3.0 | 5.3 | 72.0 | 65.1 | 2.5 | 830 | 843 | 2.6 | 2.5 |
| UTE | 11.6 | 9.99 | 3.0 | 5.9 | 63.8p | 64.9 | 2.1 | 944 | 937 | 3.1 | 2.1 |
| MANNING | 11.9 | 64.4 | 2.9 | 5.5 | 71.9 | 65.1 | 2.4 | 986 | 096 | 2.6 | 2.6 |
| NEELEY | 12.0 | 63.8 | 2.7 | 5.5 | 73.6 | 65.1 | 2.4 | 968 | 883 | 2.8 | 2.5 |
| IDO361 | 10.8 | 65.9 | 3.1 | 5.1 | 72.2 | 64.8 | 2.4 | 992 | 818 | 2.6 | 2.3 |
| IDO384 | 11.4 | 62.9 | 3.1 | 5.2 | 66.69 | 65.2 | 2.2 | 778 | 791 | 2.5 | 2.2 |
| 1DO390 | 10.3 | 64.0 | 2.4 | 0.9 | 66.1 | 65.2 | 2.1 | 833 | 932 | 2.3 | 2.2 |

Table 7. Milling and baking data for Hard Red Winter Wheat grown at Preston 1988 to 1990 and Rockland 1989 to 1990

| | Flour | Milling | • | Mixograph | - | Bake | Mix | Loaf | Corrected | Exterior | Interior |
|----------|---------|---------|------|-----------|-----------|------------|------|--------|-----------|----------|----------|
| Name | protein | yield | peak | height | tolerance | absorption | time | volume | ۲۸ | texture | texture |
| | % | % | min | шэ | degree | % | nim | Ξ | E | 0 - 4 | 0 - 4 |
| MERIDIAN | 12.8 | 9.09 | 4.0 | 5.5 | 76.4 | 61.7 | 3.5 | 869 | 006 | 2.3 | 2.2 |
| BUCHANAN | 12.0 | 60.5 | 3.0 | 5.8 | 0.09 | 61.5 | 2.4 | 920 | 1009 | 2.3 | 2.5 |
| BLIZZARD | 12.4 | 64.6 | 3.2 | 5.2 | 8.69 | 61.5 | 2.5 | 865 | 918 | 2.2 | 2.1 |
| JUDITH | 12.8 | 59.9 | 3.3 | 6.6 | 69.1 | 61.9 | 3.1 | 1010 | 1024 | 2.5 | 2.1 |
| KHARKOF | 13.0 | 59.1 | 2.7 | 5.9 | 68.2 | 61.7 | 2.3 | 952 | 946 | 2.4 | 2.4 |
| MANNING | 12.6 | 58.9 | 3.6 | 5.8 | 74.0 | 62.0 | 3.1 | 1004 | 1041 | 2.3 | 2.2 |
| SURVIVOR | 12.5 | 64.4 | 2.9 | 5.6 | 71.0 | 61.9 | 2.2 | 877 | 919 | 2.5 | 2.5 |
| WANSER | 12.4 | 61.5 | 3.6 | 2.7 | 72.0 | 61.3 | 3.1 | 896 | 1009 | 2.5 | 2.4 |
| WESTON | 13.1 | 29.7 | 2.1 | 6.4 | 59.9 | 61.5 | 1.7 | 1023 | 1008 | 5.6 | 1.8 |

Table 8. Yield of Meridian in the Western Regional Nursery, 1987-88.

| Location Meridian Promontory ORCR8313 Judith Buchanan Wanser Kharkof local ck. Ck. Name Moscow, ID 112 149 129 128 99 115 70 94 Winridge Hermiston, OR 97 112 116 119 67 71 84 116 Orcr8313 Lind, WA, Irr. 104 108 94 97 70 94 Orcr8313 Lind, WA, Irr. 82 97 84 97 77 75 66 88 Judith Covrallis, OR 84 91 77 82 43 66 88 Judith Covrallis, OR 84 91 77 82 43 66 88 Judith Covrallis, OR 84 91 77 82 43 45 84 10 Orcr8313 Moro, OR 77 73 47 71 58 44 67 Orcr8313 <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Yield of</th> <th></th> | | | | | | | | | Yield of | |
|---|-------------------------|----------|-------|-----------------|--------|-----------|--------|---------|------------|------------|
| Autiac bulsac bulsac< | Location | Meridian | ntory | ORCR8313 | Judith | Buchanan | Wanser | Kharkof | local ck. | Ck. Name |
| 3 112 149 129 128 99 115 70 94 97 112 116 119 67 71 84 116 82 97 86 88 77 75 66 88 54 82 81 99 49 68 39 81 8 91 77 75 66 88 77 66 88 7 82 81 99 49 68 39 81 8 91 77 75 66 88 77 66 88 11 75 73 67 61 71 58 41 67 Med. Fert. 56 74 80 66 49 45 64 Med. Fert. 56 74 80 64 71 36 57 4 48 50 54 37 34 31 | | pn/ac | pn/ac | bu/ac | bu/ac | bu/ac | bu/ac | bu/ac | bu/ac | |
| 4 97 112 116 119 67 71 84 116 82 97 94 90 70 94 82 97 86 88 77 75 66 88 54 82 81 99 49 68 39 81 8 84 91 77 67 66 88 17 68 89 17 89 81 67 81 80 89 49 45 64 77 77 77 77 77 77 77 77 80 66 49 45 64 64 77 80 64 77 84 64 80 66 49 45 64 77 77 77 77 77 77 77 77 77 77 77 77 77 77 77 77 74 77 74 77 74 74 <td>Moscow, ID</td> <td>112</td> <td>149</td> <td>129</td> <td>128</td> <td>8</td> <td>115</td> <td>70</td> <td>ጵ</td> <td>Winridge</td> | Moscow, ID | 112 | 149 | 129 | 128 | 8 | 115 | 70 | ጵ | Winridge |
| 104 108 94 97 94 90 70 94 82 97 86 88 77 75 66 88 34 82 81 99 49 68 39 81 48 82 81 99 49 68 39 81 A1 82 43 45 34 77 77 77 88 81 67 87 87 87 87 87 84 87 84 87 84 87 86 86 85 85 87 87 87 87 88 86 87 87 84 87 84 87 84 87 84 87 84 87 84 87 88 86 87 87 84 87 88 87 84 87 87 84 87 87 84 87 87 84 87 84 <td>Hermiston, OR</td> <td>26</td> <td>112</td> <td>116</td> <td>119</td> <td>29</td> <td>71</td> <td>8</td> <td>116</td> <td>Orcr8313</td> | Hermiston, OR | 26 | 112 | 116 | 119 | 29 | 71 | 8 | 116 | Orcr8313 |
| 82 97 86 88 77 75 66 88 34 82 81 99 49 68 39 81 8 82 81 99 49 68 39 81 8 82 81 69 49 68 39 81 7 73 77 61 71 58 41 67 Hi fert. 77 73 47 80 66 49 45 64 Med. Fert. 56 74 68 62 37 36 57 Med. Fert. 56 54 77 36 57 58 57 48 50 54 37 47 37 37 40 7 32 42 39 33 36 41 30 42 10 83 41 35 22 23 24 26 27 | Lind, WA, Irr. | 104 | 108 | 8 | 6 | 8 | 8 | 20 | 8 | Orcr8313 |
| 54 82 81 99 49 68 39 81 7 84 91 77 82 43 45 34 77 75 73 67 61 71 58 41 67 Hi fert. 77 73 47 80 66 49 45 64 Med. Fert. 56 74 68 62 37 39 58 1D 51 58 27 68 62 37 39 58 1D 48 50 54 37 47 37 37 47 37 37 47 37 37 40 42 40 42 39 38 36 41 30 42 14 30 42 14 40 26 27 40 40 26 27 40 40 40 40 40 40 40 40 40 | Kalispell, MT | 잃 | 26 | 88 | 88 | 14 | 75 | 99 | 88 | Judith |
| 3 84 91 77 82 43 45 34 77 F1 75 73 67 61 71 58 41 67 Hi fert. 77 73 47 80 66 49 45 64 Med. Fert. 56 74 64 59 64 71 36 57 64 64 57 64 67 67 67 67 67 57 64 67 77 37 37 37 47 37 37 47 37 37 47 37 37 47 | Corvallis, OR | ফ্র | 82 | 8 | 8 | 49 | 89 | 39 | 81 | Orcr8313 |
| Hi fert. 77 73 67 61 71 58 41 67 Med. Fert. 56 74 80 66 49 45 64 Med. Fert. 56 74 64 59 64 71 36 57 Alb 51 58 27 68 62 37 39 58 48 50 54 37 47 37 37 37 47 37 37 47 37 37 42 42 42 42 37 42 37 42 37 42 42 42 42 42 42 42 42 42 42 42 42 42 42 42 44 </td <td>Pendleton, OR</td> <td>28</td> <td>91</td> <td>11</td> <td>85</td> <td>43</td> <td>45</td> <td>34</td> <td>11</td> <td>Orcr8313</td> | Pendleton, OR | 28 | 91 | 11 | 85 | 43 | 45 | 34 | 11 | Orcr8313 |
| Hitert. 77 73 47 80 66 49 45 64 64 64 64 64 64 64 64 64 64 64 64 64 | Moro, OR | 75 | 73 | 29 | 9 | 7 | 28 | 41 | 2 9 | Orcr8313 |
| Med. Fert. 56 74 64 59 64 71 36 57 ID 51 58 27 68 62 37 39 58 46 49 54 37 47 37 37 37 37 T 32 42 39 33 36 41 30 42 8 T 32 41 35 26 27 40 25 22 23 24 26 26 21 26 25 16 16 14 16 17 20 1422 1.624 1.443 1.612 1.274 1.000 1.458 0.986 1.115 1.001 1.057 0.879 0.890 0.713 1.000 | Pullman, WA, Hi fert. | 11 | 73 | 47 | 8 | 99 | 49 | 45 | 2 2 | Dusty |
| 48 58 27 68 62 37 47 39 58 48 50 54 37 47 37 37 37 37 37 37 37 37 37 37 37 37 37 37 37 37 37 37 37 42 37 37 42 </td <td>Pullman, WA, Med. Fert.</td> <td>22</td> <td>74</td> <td>2</td> <td>ස</td> <td>64</td> <td>71</td> <td>36</td> <td>22</td> <td>Lewjain</td> | Pullman, WA, Med. Fert. | 22 | 74 | 2 | ස | 64 | 71 | 36 | 22 | Lewjain |
| 48 50 54 37 47 37 42 42 42 42 42 42 42 42 42 42 42 43 40 42 40< | Bonners Ferry, ID | য় | 28 | 27 | 88 | 62 | 37 | 39 | 58 | Weston |
| 46 49 54 37 34 31 32 37 1 32 42 39 33 36 41 30 42 82 33 41 35 24 26 27 40 25 22 23 24 26 21 26 15 16 16 14 16 17 20 1.422 1.624 1.443 1.612 1.274 1.000 1.458 0.986 1.115 1.001 1.057 0.879 0.890 0.713 1.000 | Pomeroy, WA | 48 | 20 | 22 | | 37 | 47 | 37 | 37 | Buchanan |
| T 32 42 39 33 36 41 30 42 15 33 41 35 26 32 27 40 25 22 23 24 26 21 26 15 16 16 14 16 17 20 1.422 1.624 1.443 1.612 1.256 1.274 1.000 1.458 0.986 1.115 1.001 1.057 0.879 0.890 0.713 1.000 | Bozeman, MT | 46 | 49 | 72 | 37 | 34 | 31 | 32 | 37 | Judith |
| 33 41 35 26 32 27 40 25 22 23 24 26 26 21 26 15 16 16 17 20 1.422 1.624 1.443 1.612 1.256 1.274 1.000 1.458 0.986 1.115 1.001 1.057 0.879 0.890 0.713 1.000 | Blue Creek, UT | 35 | 42 | 99 | g | 36 | 41 | 30 | 42 | Promontory |
| 25 22 23 24 26 26 21 26 15 16 16 14 16 17 20 1.422 1.624 1.443 1.612 1.256 1.274 1.000 1.458 0.986 1.115 1.001 1.057 0.879 0.890 0.713 1.000 | Tetonia, ID | 8 | 4 | 35 | | 8 | 32 | 27 | 40 | Survivor |
| 15 16 16 17 20 1.422 1.624 1.443 1.612 1.256 1.274 1.000 1.458 . 0.986 1.115 1.001 1.057 0.879 0.890 0.713 1.000 | Lind, WA, dry | ĸ | 23 | ន | 24 | 26 | 26 | 21 | 5 8 | Buchanan |
| 1.422 1.624 1.443 1.612 1.256 1.274 1.000 1.000 0.986 1.115 1.001 1.057 0.879 0.890 0.713 | Preston, ID | 15 | 16 | 16 | | -14 | 16 | 17 | 20 | Survivor |
| . 0.986 1.115 1.001 1.057 0.879 0.890 0.713 | % of Kharkof | 1.422 | | 1.443 | 1.612 | 1.256 | 1.274 | 1.000 | 1.458 | |
| | % of Local Ck. | 0.986 | 1.115 | 1.001 | 1.057 | 0.879 | 0.890 | 0.713 | 1.000 | |

Table 9. Yield of Meridian in the Western Regional Nursery, 1989-90.

| | Meridian | Judith | Buchanan | Wanser | Kharkof | Local Ck | Ck. Name |
|-------------------|----------|--------|----------|--------|------------|----------|----------|
| | bu/ac | bu/ac | bu/ac | bu/ac | bu/ac | bu/ac | bu/ac |
| Moscow, ID | 109 | 124 | 88 | 102 | 75 | 125 | Orcr8601 |
| Hermiston, OR | 107 | 61 | ଷ | 49 | 45 | 66 | Orcr8601 |
| Lind, WA, Irr. | 80 | 88 | 74 | 26 | 37 | 6 | Batum |
| Kalispell, MT | 95 | 8 | 8 | 89 | 46 | 85 | Judith |
| Corvallis, OR | 59 | 81 | 72 | | 33 | 118 | Orcr8601 |
| Pullman, WA | 64 | 36 | 47 | 27 | 5 8 | 98 | VH87066 |
| Bonners Ferry, 1D | 26 | 108 | 8 | 104 | 100 | # | Orcr8601 |
| Bozeman, MT | 8 | ଞ | 27 | ន | 8 | ន | Tiber |
| Blue Creek, UT | 47 | 45 | 42 | 45 | 99 | 84 | UT157140 |
| Tetonia, ID | 09 | 용 | 55 | 43 | 37 | 51 | Blizzard |
| Lind, WA, dry | 56 | 32 | 30 | 30 | 30 | 35 | Batum |
| Preston, ID | 8 | 8 | ន | 27 | 19 | 32 | Blizzard |
| Rockland, ID | 35 | 8 | 41 | 42 | প্ত | 93 | Blizzard |
| % of Kharkof | 1.569 | 1.481 | 1.269 | 1.303 | 1.000 | 1.688 | |
| % of Local Ck. | 0.930 | 0.877 | 0.752 | 0.772 | 0.592 | 1.000 | |

Table 10. Yield of Meridian in the Western Regional Nursery averaged for 1987-88 and 1989-90.

| | Meridian | Judith | Buchanan | Wanser | Kharkof | |
|-------------------------|----------|--------|----------|--------|---------|---|
| | bu/ac | bu/ac | bu/ac | bu/ac | bu/ac | |
| Moscow, ID | 110 | 126 | 9 | 109 | 72 | · |
| Hermiston, OR | 102 | 8 | 84 | 8 | 2 | |
| Lind, WA, Irr. | 85 | 88 | % | 73 | 23 | |
| Kalispell, MT | 88 | 6 | 89 | 7 | 56 | |
| Corvallis, OR | 28 | 6 | 61 | 73 | 36 | |
| Pullman, WA, Med. Fert. | 8 | 47 | 52 | 49 | 31 | |
| Bonners Ferry, ID | 7 | 88 | 9/ | 20 | 69 | |
| Bozeman, MT | 37 | 35 | 8 | 27 | 56 | |
| Blue Creek, UT | 99 | 88 | සි | £ | 8 | |
| Tetonia, ID | 47 | 17 | 40 | 88 | 32 | |
| Lind, WA, dry | 52 | 83 | 8 | 82 | 56 | |
| Preston, ID | 24 | 14 | 8 | 2 | 18 | |
| % of Kharkof | 1.496 | 1.546 | 1.263 | 1.288 | 1.000 | |
| % of Local Ck. | 0.958 | 0.967 | 0.816 | 0.831 | 0.653 | |

Percent of Percent of Local Ck. 1,006 0.983 0.989 1.017 Kharkof 1.004 0.982 0.987 1.014 1.000 1.00 0.99 0.99 0.98 1.02 1.00 0.99 1.01 0.98 0.99 1.01 1.00 1.00 Rockland 54.3 54.1 57.0 59.6 57.2 55.7 3lizzard nq/q ₽ 58.9 59.9 60.0 59.9 Survivor 56.0 53.8 56.5 58.2 58.2 56.7 Blizzard **60.5** 61.5 59.2 **₽** 58.3 26.9 57.7 59.1 59.1 62.2 61.5 59.4 62.2 61.5 60.7 62.2 80.7 dryland Ib/bu 62.8 60.6 62.0 63.0 63.0 61.1 Batum 62.7 62.1 62.3 62.3 61.9 Tetonia ID Ib/bu Survivor Blizzard **58.9** 60.7 57.9 57.2 58.9 58.4 58.2 58.5 58.3 56.9 56.8 59.5 59.5 58.7 29.2 56.1 57.9 57.5 54.5 56.2 52.3 50.4 51.3 55.7 52.4 56.2 Creek Lybu Table 11. Test weight performance of Meridian in the Western Regional Nursery 1987-88 and 1989-90 **56.3** 52.6 46.6 57.4 53.3 Bozeman 58.0 58.0 58.0 54.0 56.4 56.4 56.4 59.2 54.0 ₩ ad 58.6 54.7 58.1 58.8 61.8 62.9 57.3 57.3 59.6 60.5 Pomeroy WA 61.1 62.0 61.5 61.1 3uchanan nq/q **63.1** 62.0 61.0 Bonners Ferry Ib/bu 64.0 68.8 65.3 62.9 63.8 65.7 63.2 65.7 65.8 59.3 61.5 90.3 64.8 60.5 62.6 Orar8601 61.6 62.2 77.1 65.3 61.9 Pullman Med. fert. Ib/bu 59.1 57.5 57.1 60.1 58.5 59.4 M87066 62.1 56.0 62.5 62.1 63.0 63.0 63.1 61.0 Lewjaln **60.6** 59.8 60.1 61.5 Pullman Hi. fert Ib/bu 61.8 62.1 63.1 61.8 59.2 63.0 62.7 Dusty Kalispell MT lb/bu 56.9 59.0 56.3 56.3 56.4 59.6 59.6 59.0 61.0 59.2 56.6 60.9 59.2 Judith **58.9** 57.7 56.5 60.2 58.9 627 64.9 63.7 63.1 61.7 63.1 62.6 63.7 Orcr6313 Lind Tind 58.8 58.2 59.2 59.2 56.9 Batum 61.5 61.0 60.0 61.2 60.9 Hermiston OR Ib/bu 60.4 60.2 60.4 61.0 62.1 61.9 60.2 Oror8313 55.0 49.0 54.0 57.0 53.0 Orcr8601 59.7 57.7 55.0 58.1 59.5 Moscow 63.2 63.0 61.5 64.0 63.4 65.5 Orer8601 63.8 65.7 65.2 64.3 63.8 65.7 63.1 64.8 D 24 63.5 62.7 62.7 64.8 63.2 Meridian
Promontory
ORCR8313
Judith
Buchanan
Wanser
Kharkof
Local Ck. Buchanan Wanser Kharkof Local Ck Ck. Name *1989-90* Meridian Judith

1.02 1.02 0.99 0.99 1.02 1.01

0.98 0.99 1.01 1.00 1.00

Table 12. Milling and baking results for Meridian in the Western Regional Nursery 1988 and 1990.

| | | | | ٠ | | | Farinograpł | | | | |
|---------|---------------------|-------|-------|---------|--------|-----------|-------------|-----------|--------|------------|--|
| | | Flour | Flour | Flour | Mixing | Corrected | | | Loaf | Bread | |
| Year | Cultivar | yield | ash | protein | time | absorb. | peak | stability | volume | crumb | |
| | | % | % | % | min | % | min | min | 8 | 1 to 9 | |
| 1988 | Meridian | 70.5 | 0.28 | 11.4 | 3.4 | 62.1 | 7.0 | 12.0 | 870 | ထ | |
| 1988 | Kharkov | 67.6 | 0.38 | 13.1 | 2.0 | 61.5 | 5.9 | 10.6 | 1045 | က | |
| 1988 | Wanser | 71.3 | 0.37 | 12.5 | დ ლ | 62.0 | 7.5 | 10.7 | 1040 | CΙ | |
| 1988 | Buchanan | 70.4 | 0.36 | 11.5 | 3.1 | 65.5 | 6.3 | 9.7 | 920 | က | |
| 1988 | Judith | 71.8 | 0.38 | 12.4 | 3.0 | 64.8 | 9.2 | 14.2 | 1065 | က | |
| 1988 | ORCR8313 | 70.4 | 0.38 | 11.7 | 3.7 | 62.0 | 9.5 | 16.7 | 086 | Q 1 | |
| 1988 | Promontory | 72.0 | 0.36 | 11.6 | 3.6 | 62.3 | 7.5 | 11.8 | 945 | 4 | |
| 1988 | Survivor | 70.7 | 0.39 | 12.8 | 2.3 | 65.2 | 6.2 | 7.2 | 955 | 7 | |
| 1990 | Meridian | 69.0 | 0.36 | 12.6 | 4.4 | 65.2 | 11.7 | 20.0 | 870 | 4 | |
| 1990 | Kharkof | 68.1 | 0.40 | 14.3 | 2.6 | 68.4 | 5.5 | 6.0 | 965 | က | |
| 1990 | Wanser | 72.4 | 0.37 | 13.5 | 3.9 | 67.2 | 10.0 | 10.1 | 960 | က | |
| 1990 | Buchanan | 71.1 | 0.35 | 12.9 | 3.2 | 69.5 | 7.5 | 7.5 | 902 | 4 | |
| 1990 | Judith | 70.3 | 0.36 | 13.2 | 3.9 | 65.6 | 12.1 | 19.3 | 1000 | က | |
| 1990 | Andrew | 68.2 | 0.36 | 12.9 | 3.4 | 64.1 | 10.6 | 14.2 | 940 | 4 | |
| Ave | Meridian | 8.69 | 0.32 | 12.0 | 3.9 | 63.7 | 9.4 | 16.0 | 870 | ß | |
| Ave | Kharkof | 62.9 | 0.39 | 13.7 | 2.3 | 65.0 | 5.7 | 8.3 | 1005 | ო | |
| Ave | Wanser | 71.9 | 0.37 | 13.0 | 3.6 | 64.6 | 8.8 | 10.4 | 1000 | က | |
| Ave | Buchanan | 70.8 | 0.36 | 12.2 | 3.2 | 67.5 | 6.9 | 9.6 | 928 | 4 | |
| Ave | Judith | 71.1 | 0.37 | 12.8 | 3.5 | 65.2 | 6.6 | 16.8 | 1033 | 3 | |
| Average | Average 1988 & 1990 | 70.2 | 0.36 | 12.7 | 3.3 | 64.9 | 8.4 | 12.2 | 961 | 3.3 | |

| | Aberdeen 1987 | Aberdeen | Corvallis | Pendelton | Hermiston | Hermiston | Lind 1987 | Ontario | Average | Average w/ 8313 |
|-------------|---------------|----------|-----------|-----------|-----------|-----------|--------------|---------|---------|-----------------|
| Yield | bu/ac | bu/ac | bu/ac | bu/ac | bu/ac | bu/ac | bu/ac | bu/ac | bu/ac | pn/ac |
| Meridian | 123 | 139 | 22 | 501 | 98 | 106 | 88 | 149 | 109 | 501 |
| Stephens | 138 | 8 | 8 | 53 | 601 | 115 | 26 | 149 | 118 | 113 |
| ORCR8313 | • | 8 | 4 | 8 | • | 8 | , | • | 1 | 8 |
| Neeley | 113 | 129 | 46 | ಜ | 83 | 75 | 2 | 119 | 88 | 81 |
| Test Weight | nq/qj | nq/ql | lb/bu | ng/q! | nq/qı | nq/q | nq/qi | lb/bu | lb/bu | nq/qI |
| Meridian | 9:09 | 61.5 | , | , | , | 60.0 | 60.2 | 29.0 | 60.3 | 60.8 |
| Stephens | 59.0 | 59.9 | | , | | 59.0 | 57.2 | 58.0 | 58.6 | 59.5 |
| ORCR8313 | • | 62.3 | • | , | • | 63.5 | , | , | ı | 62.9 |
| Neeley | 61.3 | 62.9 | 4 | | ı | 60.0 | 59.6 | 60.0 | 8.09 | 61.5 |
| Lodging | % | % | * | % | % | * | % | % | % | % |
| Meridian | 8 | 8 | 8 | 0 | 0 | ۶ | 6.2 | 9 | 8 | 8 |
| Stephens | ଛ | 8 | 0 | 0 | 0 | 9 | ıç. | ଞ | 12 | e |
| ORCR8313 | , | 8 | 8 | 0 | | 9 | , | , | | 15 |
| Neeley | 54 | 15 | 06 | 8 | 8 | 8 | 27.5 | 0 | 48 | 64 |
| | | | | | | | | | | |

University of Idaho

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August 30, 1990

Dr. Ed Souza Aberdeen R & E Center P. O. Box AA Aberdeen, ID 83210

Dear Ed:

I took the time to summarize the results of our winter nurseries 1988 through 1990 and to make some specific comparisons involving ID0360. Feel free to use the information and table as you see fit, *i.e.* the request for release packet, cereal schools.

ID0360 appears to have some distinct advantages over Ute in our area. Over 12 site years ID0360 yielded 5 bu/A higher than Ute (p>F=.0001) and averaged 2.0 lb/bu higher in test weight (p>F=.0001). Protein in ID0360 did not differ statistically from Ute (p>F=.1422) when the 8 site years from 1988 and 1989 were evaluated. We have not received the 1990 data as yet.

On the down side, ID0360 is appreciably taller than Ute and lodges more. I might put this in perspective for our area. Lodging is a concern to our producers insofar as it reduces production and slows the harvest. On the other hand, I don't know of anyone custom combining in the area that is actually charging more for combining lodged grain than standing grain, even though it is more costly in terms of time, fuel, wear and tear. Our producers, were they hard red growers, would work around the lodging problem if they knew the production was going to be greater even though the lodging was a risk. Also, most of our wheat is furrow irrigated and the extra height would not affect movement of sprinkler lines. For our sprinkler irrigated wheat, the height of ID0360 is a problem. For those with a history of lodging, either N rates would be reduced, timing of application would be delayed, or Cerone would be used, or any combination of the above would be employed to reduce lodging risk.

I sincerely hope ID0360 will be approved for release. Its test weight and production performance would represent a significant improvement in financial returns for many irrigated hard red winter wheat producers.

I will add a word or two here regarding the comparison with Manning, Hawk and Thunderbird. ID0360 over 8 site years (1988-89) did not differ from Manning in protein or test weight but was significantly (p>F=.0029) more productive averaging 9 bu/A higher. ID0360 was shorter than Manning by almost 3 inches and lodges appreciably less (p>F=.0001).

We have included Hawk and Thunderbird in the last two years of the nurseries. ID0360 yielded significantly (p>2.05) greater than Hawk and Thunderbird wasn't even close. ID0360 was slightly shorter than these two proprietaries. Lodging differences were not great. Thunderbird had the greatest protein.

I hope this is helpful. Should you have any questions let me hear from you.

Cordially,

Bradford Brown

Extension Agronomist

Mean grain yield, protein, test weight, plant height and lodging for ID0360 and other irrigated hard red winter wheat entries in Southwest Idaho Extension Cereal Nurseries. 1988-1990.

| Entry | Jrain | Grain Yield (bu/A) | bu/A) | Pro | Protein (%) | (%) | Test W | Test Weight (lb/bu) | (nq/ql | Plan | Plant Height (in) | t (in) | Š | Lodging (%) | (%) |
|--------------------|-------|--------------------|-------|-------|-------------|------------|--------|---------------------|--------|-------|-------------------|--------|-------|-------------------|-------|
| ~ | 88-88 | 06-88 06-68 68-88 | 88-90 | 88-89 | 1989 | 1989 88-89 | 88-89 | 06-88 06-68 68-88 | 88-90 | 88-89 | 88-89 89-90 88-90 | 88-90 | 68-88 | 88-89 89-91 88-90 | 88-90 |
| ID0360 | 125 | 125 120 119 | 119 | 11.5 | 11.5 11.5 | 11.5 | 61.8 | 61.8 61.9 61.6 | 61.6 | 37.5 | 37.5 36.6 37.2 | 37.2 | 11 | 12 | 14 |
| Ute | 118 | 118 112 | 114 | 11.3 | 11.4 | 11.2 | 59.8 | 59.8 59.8 | 59.6 | 29.3 | 29.2 | 29.4 | co | - | 7 |
| Manning | 115 | | | 11.5 | | • | 61.7 | | | 40.3 | • | | 49 | , | • |
| Hawk | • | 113 | | 1 | 11.7 | , | ı | 63.0 | | ı | 37.5 | · t | • | 21 | ı |
| Thunderbird | • | 62 | • | • | 13.2 | | • | 63.2 | • | | 37.4 | 1 | • | 12 | • |
| LSD _{.05} | 5 | 4 | æ | હ | 4. | 4. | ₹: | 4. | 4. | 7 | 9. | ς: | 10 | 10 | 7 |

Table 1. Mean grain yield, protein, test weight, plant height, and percent lodging of irrigated winter wheat and winter barley. Parma, New Plymouth and Hammett combined. 1991.

| Entry | Grain Yd ¹ / bu/A | Protein % | Test Wt. lb/bu | Plant Ht. in. | Lodging % |
|-----------------------|---------------------------------|-----------------|-------------------|------------------|--------------|
| | | Soft White Wint | er Wheat | | |
| Stephens | 108 | OOL TITALS TIAL | 59.9 | 35.5 | 0 |
| Dusty | 118 | | 60.2 | 36.3 | Ō |
| Malcolm . | 112 | | 60.0 | 36.4 | Ŏ |
| ORCW8314 | 109 | • | 59.6 | 36.8 | · O |
| ORFW75336 | 120 | | 60.1 | 36.2 | 0 |
| ID81-273B | 115 | | 61.4 | 35.8 | 3 |
| Daws | 110 | | 60.4 | 37.3 | . 0 |
| Kmor | <u>107</u> | | <u>58.6</u> | <u>36.8</u> | <u>14</u> |
| LSD _{.05} 2/ | 7 | | .7 | | 10 |
| | | Hard Red Wint | er Wheat | | |
| Ute | 98 | | 60.0 | 30.2 | 0 |
| Hawk | 113 | | 62.3 | 39.3 | 18 |
| ID0360 | 108 | | 61.2 | 38.3 | 5 |
| ORCW08313 | <u>114</u> | | <u>62.8</u> | <u>38.9</u> | <u>o</u> |
| LSD _{.05} | 7 | | .7 | .9 | 11 |
| , | • | Winter Ba | | | |
| Sprinter | 134 | | 52.3 | 40.0 . | 45 |
| Boyer | 141 | • | 48.6 | 39.7 | 34 |
| Hundred | 133 | , | 49.1 | 38.2 | 49 |
| Mal | 130 | | 48.7 | 39.6 | 38 |
| B3035 | 138 | | 48.8 | 32.4 | . 8 |
| B2607 | <u>140</u> | | <u>47.8</u> | <u>40.0</u> | <u>34</u> |
| LSD _{.05} | 13 | | 1.1 | 1.1 | 22 |

Grain yield is based on a test weight of 48 lb/bu for bariey and 60 lb/bu for wheat, after correction of dry weight to a moisture content of 11%.

lef2000g

^{2/} Means must differ by more than the LSD_05 to be statistically different at the 5% probability level.

Mean grain yield, protein content, test weight and plant height of irrigated winter wheat, winter barley and winter triticale. Dietrich, Carey, Burley and Jerome combined. 1990.

| Variety | Grain Yd.(1) bu/A | Protein(2) % | Test Weight P lb/bu | lant Ht. in. | | | |
|----------|----------------------|-----------------|------------------------|-----------------|--------------|---|-------------|
| | | Soft White | Winter Wheat | | | | |
| Nugaines | 97.9 | | 60.3 | 31.0 | • | | |
| Dusty | 98.8 | | 58.6 | 32.4 | | | |
| Stephens | 93.4 | | 58.4 | 31.9 | : | | |
| Malcolm | 102.9 | | 59.2 | 32.1 | | | 100 |
| Madsen | 97.6 | | 57.8 | 32.6 | | U | |
| Daws | 93.0 | | 59.0 | 32.1 | | | |
| OSU 21 | 87.7 | | 57.3 | 33.0 | | | |
| FW25336 | 101.9 | | 59.1 | 32.4 | • | | |
| PB1 57A | 97.7 | | 58.1 | 31.5 | | | . 7 |
| Syringa | 100.6 | | 59.5 | 33.0 | | | |
| • | . · | Hard Red W: | inter Wheat | | | | ٠. |
| Neeley | 97.4 | | 62.1 | 36.8 | • | | |
| Ute | 89.3 | | 58.8 | 27.9 | | | |
| Manning | 97.2 | | 60.8 | 34.8 | | | |
| ID0360 | 104.5 | | 61.0 | 33.8 | | | |
| ID0361 | 108.1 | | 60.7 | 34.0 | | | |
| • | | Winter Bar | ley | | | | |
| Scio | 101.8 | | 48.0 | 30.4 | | | |
| Boyer | 105.4 | | 48.3 | 31.8 | 4 | | |
| Schuyler | 100.9 | • | 48.8 | 32.9 | | | |
| Mal | 101.7 | | 47.2 | 32.5 | • | | |
| AB812 | 95.6 | | 48.3 | 30.4 | | | |
| Sprinter | 101.7 | | 48.8 | 32.7 | | | |
| | | Winter Tri | ticale | • | | | |
| Flora | 87.5 | | 44.5 | 30.0 | | | |
| B81420 | 108.8 | • | 50.0 | 39.0 | | | |
| VT086497 | 83.0 | | 45.7 | 29.0 | ÷ | | |
| Whitman | 98.2 | | 49.5 | 39.0 | | | |
| VT085139 | 85.0 | | 48.4 | 30.7 | | | |
| FT87788 | 122.6 | | 49.7 | 41.0 | | | |

¹ Grain yield based on a test weight of 60 lb/bu for wheat, , 48 lb/bu for barley and 50 lb/bu for triticale.

^{2 &}quot;As is" basis

³ Wheats Wheats grown at Dietrich, Carey and Burley, barley at Deitrich Carey, Burley, Jerome and triticale at Dietrich and Burley.

1991 Extension trial results in District III (Rupert and Jerome) and District IV (Idaho Falls and Soda Springs) Data courtesy of L. Robertson.

| | District | District | District | District | District | | Soda |
|------------|----------------|------------|---------------|------------|---------------|---------|---------|
| | III irrigated | IV dryland | III irrigated | IV dryland | III irrigated | Rupert | Springs |
| | yield | yield | test wt. | test wt. | height | lodging | lodging |
| | bu/ac | bu/ac | nq/q | nq/q | Ŀ. | % | % |
| Meridian | 127 | 28 | æ | 19 | 35 | 0 | 0 |
| Neeley | 121 | æ | 49 | 09 | 9 | 10 | 0 |
| Manning | 121 | 62 | æ | 09 | 88 | ଯ | 9 |
| Ute | 1 3 | | 62 | | ଷ | 0 | |
| Promontory | 126 | 2 | 25 | 61 | တ္တ | 0 | 0 |
| IDO421 | # | 09 | ଞ | 83 | 4 | 8 | 0 |
| Blizzard | | 62 | | 61 | • | | 8 |
| | | | | | | | |

COOPERATIVE EXTENSION SERVICE

المانية University of Idaho

College of Agriculture
In Cooperation with the
U.S. Department of Agriculture

July 26, 1991

TO: Ed Souza

FROM: Larry Robertson

RE: Quality of IDO360 from my trials

Enclosed are the quality results from the samples taken from the plots I have had over the past two years. The 1989 samples are composites of three irrigated locations, Kimberly, Dietrich and Gooding and the 1990 samples are composites of Dietrich, Carey and Burley. Equal amounts of grain were taken from each location for the composited sample. This procedure was followed for IDO360 as well as the check varieties.

| - | | 1989 | | 19 | 90 | |
|----------------|---------|----------|---------|----------|--------|-------------|
| Characteristic | ID0360 | Neeley | y Ute | ID0360 | Neeley | <u> Ute</u> |
| Flour Protein | 10.9 | 11.4 | 10.4 | 10.4 | 11.0 | 10.3 |
| Flour Yield | 62.3 | 61.8 | 63.7 | 61.9 | 62.2 | 63.8 |
| Mixograph | | | | | | |
| Peak | 3.4 | 2.7 | 2.5 | 3.8 | 3.4 | 3.2 |
| Height | 5.5 | 5.8 | 5.6 | 5.4 | 5.4 | 5.5 |
| Tolerance | 72 | 71 | 73 | 78 | 77 | 75 |
| Absorption | 64 | 64 | 63 | 63 | 64 . | 63 |
| Test Bake | | | | | | |
| Mix time | 3.0 | 2.6 | 2.4 | 3.3 | 2.9 | 3.1 |
| Dough type | 5 | 6 | 6 | 5 | 6 | 5 |
| Abs. (14%) | 61 | 61 | 60 | 60 | 61 | 60 |
| Loaf vol. | 665 | 840 | 820 | 635 | 785 | 725 |
| Exterior | 2.0 | 3.0 | 3.0 | 1.5 | 3.0 | 1.5 |
| Interior | 1.5 | 2.0 | 2.0 | 1.0 | 2.0 | 1.5 |
| Comments | all dou | ghs were | e rated | as stick | CY . | |

all doughs were rated as sticky
IDO360 and Ute were rated as pinhole
 (inadequate oxidation) for both years.
Ute was coarse in 1989 and had wrong side
 break for 1990 samples.

It appears from these samples that IDO360 possesses adequate protein and milling qualities for use in our typical markets. Mixograph data indicates the dough has adequate mixing characteristics, in fact it has some advantages in

28

mixing time compared to Neeley and Ute. A potential serious problem may exist in the dough handling properties of IDO360 and especially in loaf volume.

If this data is representative of the variety, IDO360 will not enhance the quality of wheat coming from Idaho and in fact will be a detriment. With the superior yielding ability and other agronomic characteristics of this variety, it likely would not take long for it to be grown on significant acreages of that planted to winter wheat. I have not seen much of your quality data but think we should proceed very carefully and be sure quality characteristics are carefully documented before proceeding. I am especially concerned about the problems that may exist with the much lower loaf volume this variety shows.

I would be pleased to discuss this in more detail with you.

cc: Mark Kruk

Memorandum November 14, 1991

To:

Larry Robertson

From: Ed Souza, University of Idaho, Aberdeen REC

Subject: Extension Trial Milling and Baking Data for IDO360

I would like to thank you for summarizing the IDO360 milling and baking data from your extension trials. The data is fairly similar to the results we have obtained in the Aberdeen trials and in the Western Regional Nursery. IDO360 is satisfactory for milling characteristics, excellent for mixing characters, and deficient for loaf volume.

I have discussed these results with Mike Welsh of Cereal Food Processors. In conversations with Mike it appears that mixing characteristics are very important for a good hard red winter wheat. Loaf volume is important but of secondary consideration because typically either a spring wheat is blended with the winter wheat or a chemical amendment can be added to increase loaf volume. In their lab tests of IDO360 they found the loaf volume acceptable relative to Manning and the mixing characteristics a definite plus.

In breeding wheats for the irrigated southern Idaho conditions, there appears to be a negative genetic correlation between mixing time and loaf volume. The mixing characteristics of IDO360 are fairly similar to Peak and Peak 72 which also had the tradeoff between mixing characters and loaf volume. I have gone back and forth about the quality of IDO360 but feel that the mixing characteristics of IDO360 are desirable enough to support release.

I intend to include quality data with your comments into the release package. I appreciate your participation in the accumulation of data for release.



Jniversity of Idaho

208-397-4181 FAX: 208-397-4311

University of Idaho

August 30, 1990

Dr. Ed Souza Aberdeen R & E Center P. O. Box AA Aberdeen, ID 83210 College of Agriculture SW Idaho R/E Center 29603 U of I Lane Parma, Idaho 83660-9637 U.S.A. 208-722-6701 FAX 208-722-6708

Dear Ed:

I took the time to summarize the results of our winter nurseries 1988 through 1990 and to make some specific comparisons involving ID0360. Feel free to use the information and table as you see fit, i.e. the request for release packet, cereal schools.

ID0360 appears to have some distinct advantages over Ute in our area. Over 12 site years ID0360 yielded 5 bu/A higher than Ute (p>F=.0001) and averaged 2.0 lb/bu higher in test weight (p>F=.0001). Protein in ID0360 did not differ statistically from Ute (p>F=.1422) when the 8 site years from 1988 and 1989 were evaluated. We have not received the 1990 data as yet.

On the down side, ID0360 is appreciably taller than Ute and lodges more. I might put this in perspective for our area. Lodging is a concern to our producers insofar as it reduces production and slows the harvest. On the other hand, I don't know of anyone custom combining in the area that is actually charging more for combining lodged grain than standing grain, even though it is more costly in terms of time, fuel, wear and tear. Our producers, were they hard red growers, would work around the lodging problem if they knew the production was going to be greater even though the lodging was a risk. Also, most of our wheat is furrow irrigated and the extra height would not affect movement of sprinkler lines. For our sprinkler irrigated wheat, the height of ID0360 is a problem. For those with a history of lodging, either N rates would be reduced, timing of application would be delayed, or Cerone would be used, or any combination of the above would be employed to reduce lodging risk.

I sincerely hope ID0360 will be approved for release. Its test weight and production performance would represent a significant improvement in financial returns for many irrigated hard red winter wheat producers.

I will add a word or two here regarding the comparison with Manning, Hawk and Thunderbird. ID0360 over 8 site years (1988-89) did not differ from Manning in protein or test weight but was significantly (p>F=.0029) more productive averaging 9 bu/A higher. ID0360 was shorter than Manning by almost 3 inches and lodges appreciably less (p>F=.0001).

We have included Hawk and Thunderbird in the last two years of the nurseries. ID0360 yielded significantly (p>2.05) greater than Hawk and Thunderbird wasn't even close. ID0360 was slightly shorter than these two proprietaries. Lodging differences were not great. Thunderbird had the greatest protein.

I hope this is helpful. Should you have any questions let me hear from you.

Cordially,

Bradford Brown

Extension Agronomist

Mean grain yield, protein, test weight, plant height and lodging for ID0360 and other irrigated hard red winter wheat entries in Southwest Idaho Extension Cereal Nurseries. 1988-1990.

| | | | | | | | | | | | | ÷ | | | |
|-------------|---------------|--------------------|-------------------|---------|-------------|------------|--------|---------------------|--------|-------|-------------------|--------|----------------|-------------------|-------|
| Entry | <u> Frain</u> | Grain Yield (bu/A) | bu/A) | Pro | Protein (%) | (%) | Test W | Test Weight (lb/bu) | lb/bu) | Plant | Plant Height (in) | t (in) | Ĭ | I odoina (%) | (%) |
| 3 | 88-89 | 06-88 06-68 68-88 | 88-90 | 88-89 1 | 1989 | 68-88 6861 | 88-89 | 06-88 06-68 68-88 | 88-90 | 88-89 | 06-88 06-68 68-80 | 88-90 | 68-88 88-89 | 88-89 89-91 88-90 | 88-90 |
| ID0360 | 125 | 125 120 119 | 119 | 11.5 | 11.5 | 1.5 11.5 | 61.8 | 61.8 61.9 61.6 | 61.6 | 37.5 | 37.5 36.6 37.2 | 37.2 | 11 | 12 | 41 |
| Ute | 118 | 112 | 114 | 11.3 | 11.4 | 11.2 | 59.8 | 59.8 | 59.6 | 29.3 | 29.2 | 29.4 | m | ₩ | 7 |
| Manning | 115 | 1 | | 11.5 | | 1 | 61.7 | ı | | 40.3 | ı | · | 49 | ı | • |
| Hawk | 1 | 113 | 1 | • | 11.7 | 1 | • | 63.0 | • | | 37.5 | | 1 | 21 | |
| Thunderbird | ı | 6 | • | • | 13.2 | | | 63.2 | | • | 37.4 | | 1 | 12 | |
| LSD.05 | 5 | 4 | ر د | ς; | 4. | 4. | ئ. | 4. | 4. | 7. | 9. | | 10 | 10 | 7 |

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| LABNUM VARIETY | IDNO | CLASS | TUT | TSIMA | WPROT | UNHRD | FYELD | FASH | FPROT | MABS | MABSC | MTYPE | FABS | FABSC | FPEAK | FSTAB |
|--|--|--|------------------------------|---------------------------|--------------------------|--------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|--------------|------------------------------|--------------------------------------|-------------|----------------------|
| 902427 LEWJAIN 902428 KMOR 902429 SPRAGUE 902430 ELTAN | C1017909 WA7529 C1015376 WA7431 | ANS SAN SAN SAN | 59.6 59.6 61.9 | 10.6 11.8 10.9 | 7.1 7.0 11.9 12.2 | 2882 | 73.6 74.6 73.1 74.5 | 14. 24. 43. | 6.0 5.8 10.1 | 55.8 54.4 58.5 59.8 | 58.1 56.9 56.7 57.5 | ##£ 2 | 54.4 54.0 58.8 57.8 | 56.7 56.5 57.0 | 22.1.2 | 6.3 7.9 7.0 |
| 902431 DAWS 902432 ELTAN 902433 KMOR 902434 CREW 902435 RELY | C1017419 WA7431 WA7529 C1017951 WA7527 | SHA CLUB SHA SHA SHA SHA SHA | 59.5 58.9 57.9 62.2 | 9.7 9.9 7.0 10.1 | 9.0 8.6 9.5 9.5 | 6 43 33 34 4 43 93 34 | 74.9 75.0 75.2 75.2 | . 34 . 34 . 42 . 42 | 7.7. 6.9 8.4. 8.4. | 55.5 55.0 51.3 8.13 | 56.5 57.5 51.2 51.2 | : ಹೌನನನನ | 56.9 50.3 56.7 56.7 | 57.7 51.3 56.8 56.6 57.0 | 8.5.5.5.5 | i 2222-t i 2227-t |
| 902436 UTE+NEELY 902437 | 10360 | HRV | 62.8 63.3 | 9.3 | 11.6 12.4 | ដន | 75.1 | .37 | 10.6 10.3 | 64.8 | 62.5 61.9 | H 7 | 69.0 65.1 | 66.7 | 9.0 10.0 | 14.5 |
| mean nursery flour protein = | protein = 8.3 | | ıill type | mill type = Miag Multomat | l tomat | | | | | | | | | | | |

| LABNUM | VISCO | VISCC | BABS | BABSC | MTIME | LVOL | TAOLC | BCRGR | PROG | 1000 | 21002 | 168 | CAVOL | SCSCOR | NITA | NOSCOR | LOCATION |
|-------------------|--------------|----------------|------|--------------|-------|------------|------------|-------|--------------------|------------|----------|---------------|-------|--------|------|----------|----------------------------|
| 902427 | 30 | 56 | | • | | | | | | 07.0 | 5, 0 | | 1,05 | 6 | 207 | <u>ا</u> | |
| 902428 | ۶ ۱ | 119 | | | | | | | | 9.27 | 9.6 | . eo | 1365 | 20.0 | 20° | 2 % | Putigan |
| 902429 | 123 | & 6 | | | ٠ | | | | | 8.65 | 8.85 | • | 1380 | 77.0 | 354 | \$ | Omak |
| Y0245U | 5 | 2 | | | | | | | | 8.69 | 8.94 | ľ | 1330 | 74.0 | 311 | 99 | Omak |
| 902431 | 83 | 8 | | | | . • | | | | 8.60 | 8.51 | ξ. | 1310 | 74.0 | 333 | 7 | Put Iman |
| 902432 0027.77 |) (| ۲, | | | | | | | | 8.93 | 8.82 | ∞ | 1330 | 77.0 | 318 | 69 | Pul Iman |
| 902433 | | e : | | | | | | | | 6.0 | 8.93 | ∞ : | 1380 | 80.0 | 295 | 89 | Put Iman |
| 002635 | , t | - K | | | | | | | | 8.90 | 6.6 | 1 00 I | 1295 | 72.0 | 352 | 2 | Pullman |
| 2017 | * | 1 | | | | | | | | 8.89 90 | 8. 8. | _ | 1325 | 72.0 | 354 | 2 | Pul Iman |
| 902436 902437 | 213 130 | 126 82 | 70.5 | 68.2 64.1 | 3.6 | 865 805 | 722 681 | 99 | . - - 0 | 7.82 | 8.07 | | | | 325 | 8 8 | South Idaho South Idaho |
| | - | | | | | | | | | | | | | | | ; | |

and score were somewhat less. Daws (902431) served as the check variety for comparison to Eltan (902432) and Knor (902433). Eltan and Kmor showed an advantage in sponge cake volume and score, particularly control flour yield with less flour ash content. Both had significantly larger cookie diameter and they also showed an advantage in sponge cake volume and Kmor were somewhat less than Daws. Crew (902434) served as the check variety for comparison to Rely contents and Illury yield with a comparable cookie diameter. It had a slight advantage in fluur yield with a comparable cookie diameter. It had a slight advantage in fluur yield with a comparable cookie diameter. It had a slight advantage in fluur yield with a comparable cookie diameter. It had a slight advantage in fluur yield of 10360 was significantly noodle scores were equal to that of Crew. Ute end Neely (902436) served as the check variety for comparison to 10360 (902437). Flour yield of 10360 was significantly less and flour ash significantly higher. Bread loaf volume was significantly less also, however bread crumb grein was equal. with Eltan (902430). Eltan showed a slight adventage in flour yield and cookie spread, however the sponge cake volume and score as well as Udon noodle weight increase and score were somewhat less. Daws (902431) served as the check variety for comparison to Eltan (902432) and Knor (902433). Eltan and Kmor showed some advantage in tors represent major foreign and domestic users of PNW wheat. Results from the individual collaborators are summarized in a separate project report: PNW Grains Council Collaborative Jest, Iwentieth Annual Report - 1990 Crop. Our evaluation of these selections is as follows: Lewjain (902427) served as the check variety for comparison with Kmor (902428). Kmor showed a slight advantage in flour yield, however the cookie spread was slightly less. Japanese sponge cake volume was somewhat less, however the cake score was comparable. Japanese Udon noodle score was found to be slightly less. Sprague (902429) served as the check variety for comparison to two bushels were milled on a Miag Multomat (Filot Mill) and sub-samples of the flour were sent to 17 industry laboratories for quality evaluation. These coopera-Soft White Winter selections (902427 and 902428) were grown at Pullman, WA. One COMMENIS: These samples represent advanced lines which are candidates for release.

FGIS Technical Center, FMD Board of Appeals and Review 10383 N. Executive Hills Blvd. P. O. Box 20285 Kansas City, MO 64195

16 00 1 NECO

| TO: | Ed Souza, Plant Breeder University of Idaho Experiment Station Aberdeen, Idaho | |
|----------------------|--|------------------------|
| FROM: | Arnie R. Class, Chairman Board of Appeals and Review | |
| SUBJECT: | Classification of the Variety 360 | |
| mentioned Appeals an | for the sample(s) you submitted representing 360 Based on a review of sample(s) kernel and varietal characteristics nd Review (BAR) has determined the variety classing requirements for HRW | f the above |
| Kernel cha | aracteristics include the color, shape, length of the germ, crease and brush. | n of kernel and |
| Sample Eva | aluation: | |
| Uniform in | n Characteristics X Yes | No. |
| | other Class , what class? | X No |
| Could Caus | se Marketing Problems Yes | X No |
| Other Comm | ments: Excellent class characteristics for | HRW. |
| | | |
| Weight of | Sample Submitted: 600 grams | |
| 1/ The abo | ove decision applies only to the quantity of v for our review and does not apply to any other | wheat er identified |

cc: John W. Marshall

lots. The effect of environment on morphological characteristics may be significant and necessitate reevaluation.



General Offices: 2000 Johnson Drive

Mill-701 E. 17th

Mission Woods, Ks. Wichita, Ks. 67214 即立ていての DATE RECEIVED 6-21-91 SOURCE Dades SAMPLE ID C/B IDO 360 SAMPLE ID dB I 20 L Aberdeen Aberdeen WHEAT ANALYSIS (12% MB) WHEAT ANALYSIS (12% MB) 13009 58.7 TEST WEIGHT 与もり TEST WEIGHT 59.7 58.8 MOISTURE 8.5 9.5 MOISTURE 9.5 WHEAT PROTEIN 15.8 WHEAT PROTEIN 14.69. FLOUR ANALYSIS (14% MB) FLOUR ANALYSIS (14% MB) MOI STURE MOISTURE ASH ASH PROTEIN PROTEIN FALLING NUMBER FALLING NUMBER TREATMENT TREATMENT FARINOGRAPH FARINOGRAPH **ABSORPTION 6**2. **ABSORPTION** VALORIMETER VALORIMETER PEAK PEAK MTI MTI STABILITY STABILITY BAKING DATA BAKING DATA METHOD. METHOD ABSORPT I'ON ABSORPTION MIX TIME MIX TIME LOAF VOLUME 3050 3125 LOAF VOLUME SCORING DATA SCORING DATA CRUMB COLOR CRUMB COLOR GRAIN GRAIN TEXTURE TEXTURE EXTERNAL EXTERNAL REMARKS REMARKS Stren

Meridian Hard Red Winter Wheat

Exhibit E. Statement of Basis of Applicant's Ownership

Meridian was developed initially through cooperative research between the USDA-ARS and the University of Idaho. Management of the Aberdeen breeding program was transferred from the USDA-ARS to the Idaho Agricultural Experiment Station (IAES) in 1987. Final stages of testing and development of Meridian were administered by the Idaho Agricultural Experiment Station. IAES will release and maintain breeders seed of Meridian.